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ARMY CONCEPT TEAM IN VIETNAM
APO 143, San Francisco, California

ENGINEER CONTROL AND ADVISORY DETACHMENTS

Final Test Report

15 October 1963

ARMY CONCEPT TEAM IN VIETNAM
APO 143, San Francisco, California

ACTIV-SW

15 October 1963

SUBJECT: Final Report — Engineer Control and Advisory Detachments

TO: See Distribution

Transmitted herewith is the final report of the ACTIV test of Engineer Control and Advisory Detachments in the Republic of Vietnam.

Thomas O. Blakeney

THOMAS O. BLAKENEY
Colonel, Armor
Chief

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ABSTRACT

This is the final report of a 120-day test conducted by the Army Concept Team in Vietnam to evaluate engineer control and advisory detachments (ECAD) in support of counterinsurgency operations.

ECADs augment special action forces. Two ECADs were on TDY in Vietnam for testing. One control team and three advisory teams operated under the Senior MAAG Advisor, IV Corps. The other control team and two advisory teams worked with special forces detachments located in II, III, and IV Corps areas.

Control teams provide engineer staff personnel for special action forces control elements and have an engineering design capability. Advisory teams advise indigenous forces on civic action type construction projects and train troops in engineer support of tactical operations. Advisory team mission equipment consists of a pioneer tool kit and a 3/4-ton truck.

In line with President Kennedy's "People-to-People" program, ECAD effort was oriented toward civic action at the very lowest echelons of government. Small engineering projects were identified, planned, and coordinated with local authorities in areas of unit operation. Emphasis was on simple structures, which could be built with common hand tools from locally available materials. Each advisory team had $1000 imprest funds per month for labor hire, purchase of materials, equipment rental, and other construction costs. Training military and paramilitary troops in engineer subjects was also accomplished.

Ninety-six projects were initiated. Of these, 8 were abandoned due to Viet Cong activity, inability to obtain specialized equipment, or for other cogent reasons. Some of these will be completed by hamlet personnel and others by public works agencies with USOM or AAVN support. Another 3 projects, initiated late during the test, will be completed by two teams retained by Headquarters U.S. Special Forces, Vietnam for an additional 30 days' temporary duty.

Public officials and military authorities have been enthusiastic in praising the accomplishments of the ECADs under test. The factor contributing most to the successful test of the ECAD concept in Vietnam was sticking to a policy of undertaking modest structures at the "grass roots" level. The impact on small village economy and welfare was immediate. Local public officials, who sponsored worthwhile projects, became identified with them. Peasants were trained in new and different construction techniques and procedures. These

people form a potential labor force, capable of building additional similarly unsophisticated structures. The over-all cost of these modest civic action projects, whether the labor force was hired or worked on a volunteer basis, was exceptionally low.

CONTENTS

I INTRODUCTION

A. PURPOSE OF THE TEST

To evaluate, through field test in an active theater, the performance and effectiveness of engineer control and advisory detachments (ECADs) in counter-insurgency operations.

B. TEST ORGANIZATION

1. Engineer control and advisory detachments are a TOE 5-500 series augmentation to special action forces.1/ The control team is designed to provide engineer staff personnel for a special action forces control element and has a limited engineering design capability. The advisory team advises indigenous forces on civic action construction projects and trains troops in engineer support of tactical operations. There were two ECADs on TDY in Vietnam for testing. One consisted of a control team and three advisory teams operating under the Senior MAAG Advisor, IV Corps. The other consisted of a control team and two advisory teams attached to Headquarters, US Army Special Forces, Vietnam (USASFV). These five-man teams were from the 534th Engineer Detachment at Fort Bragg and the 539th Engineer Detachment on Okinawa. ECADs departed from their home stations on 15 May 1963 and became operational shortly thereafter.

2. Three evaluators - an engineer lieutenant colonel and two majors - arrived in Vietnam between 13 June and 21 June 1963.

3. During the test period teams operated in more than 60 towns, hamlets, and special forces camps located in 14 provinces. At the termination of the test ECAD teams were stationed as shown in Annex A.

C. CONDUCT OF TEST

1. The test was conducted in support of actual counterinsurgency operations in cooperation with Vietnamese and US forces and the United States Operations Mission (USOM).

1/ A special action force consists of special forces units augmented with civil affairs, psychological warfare; engineer, medical, intelligence, military police, Army Security Agency, and signal detachments, as required.

2. Since doctrinal literature on ECAD missions and operations has not been published, evaluation of operations and organization was related to concepts contained in the ACTIV ECAD Test Plan, selected correspondence pertaining to the test,[2] and the capabilities statements and tables contained in Change 13 to TOE 5-500C, 25 February 1963. Observation of units under the operational control of MAAG and special forces constituted a basis for comparison of differing operational control and administrative support systems.

3. In keeping with President Kennedy's "People-to-People Program," most ECAD effort was oriented toward civic action and welfare at the "grass roots" level. Engineer training, construction, and design projects were identified, planned, and coordinated with local civilian and military leaders in areas of advisory team operation. Emphasis was on relatively simple structures which could be built with common hand tools using locally available materials. A breakdown of projects, by recipient, is as follows:

Type Project	Number of Projects Initiated	Number of Projects Completed[3]
Civic Action	64	56
Vietnamese Military Forces	5	5
US Military Forces	27	27
Total Projects	96	88

4. The 534th Engineer Detachment of Fort Bragg sent two men to Vietnam for orientation and reconnaissance 30 days before the beginning of the test. The 539th Engineer Detachment of Okinawa, however, did not send an advance party as it did not receive the ECAD test plan, which authorized advanced reconnaissance, until after the test was underway. As a result, initiation of special forces ECAD advisory team operations was delayed.

5. Test observations were made during and upon completion of individual projects. Comments of selected military participants and Vietnamese beneficiaries were solicited, and these provide a part of the data on which this report is based.

2/ For specific references see Annex B.

3/ Reasons for incomplete status are VC activity and inability to obtain equipment or supplies. One bridge, a major road project, and a special forces-strike force camp are not yet complete. These were initiated late in the test and will be completed under supervision of two ECAD teams that were retained by special forces for 30 days after the end of the test period.

6. Upon completion of the test, a critique was held with all commissioned and nearly all enlisted ECAD personnel participating. The discussion that ensued brought forth many significant and useful recommendations, which have been incorporated into this report.

D. CIVIC AND MILITARY REACTION

1. Vietnamese and US Army authorities displayed increasing interest as the test progressed. All provincial commanders, in whose areas advisory teams operated, have requested replacement teams. MAAG sector advisors have written letters of appreciation to all advisory team chiefs, citing individuals, who have done outstanding work. Special forces detachment commanders have written letters of appreciation to selected individuals. Evaluation team interrogation of military and civilian authorities, from provincial down to hamlet level, revealed that the ECAD effort was definitely effective, and in all cases, greatly appreciated.

2. One ECAD team member has been recommended for award of the bronze star by the MAAG sector advisor at RACH GIA for the outstanding results he achieved in the face of many adversities on clear-and-hold and market place projects in the vicinity of the strategic hamlet of THO SON[4].

3. The Vietnamese Joint General Staff (JGS) requested that ACTIV brief General Thiem and other members of the JGS on ECAD activities. This briefing, conducted on 9 August, 1963 was followed by General Thiem's saying "Maybe we should have a small Vietnamese or US Army detachment supervising these simple self-help civic action projects in every province."

4. The Commanding Officer, USASFV requested and was authorized to retain two ECAD teams for 30 days after termination of the test. These teams are continuing to completion a road project, part of a clear-and-hold operation, an important bridge, and supervision of a contract camp construction project.[5] They have also undertaken other new special forces sponsored projects.

4/ pp C-144 through C-148.

5/ p C-128 and p C-133.

II OBJECTIVES

A. OBJECTIVE I

To determine modifications in ECAD doctrine, techniques, and procedures required for counterinsurgency operations, by testing teams in the following areas:

1. Organizing, supervising, training, and motivating unskilled local civilian and military groups to accomplish engineering tasks.

2. Command, control, operations, and staff responsibilities.

3. Advising and training local military and civilian skilled engineer forces in support of "provincial rehabilitation," "resettlement," "clear-and-hold," "strategic hamlet," and other special warfare operations.

4. Formulation of improved engineering design and area layout for strategic hamlets.

5. Operations at multiple locations.

6. Design and execution of engineer tasks without local assistance.

7. Collection of intelligence information on lines of communications, airfields, construction resources, and port and beach facilities.

8. Adequacy of Section I of the TOE.

B. OBJECTIVE 2

To determine modifications in ECAD organization and equipment required for counterinsurgency operations, with emphasis in the following areas:

1. Application of military skills and equipment to civic action and pioneer projects.

2. Adequacy of the TOE, Sections II and III.

C. OBJECTIVE 3

To determine the optimum administrative support base for ECAD teams, and similarly oriented organizations, in counterinsurgency operations, with emphasis on:

1. Project funding.

2. Supply of construction materials and repair parts from Vietnamese and US government agencies.

3. Construction equipment support from Vietnamese and US government agencies.

4. Administrative support of team personnel.

5. Augmentation equipment and personnel.

III SUMMARY OF FINDINGS

A. OBJECTIVE 1 - DOCTRINE AND PROCEDURES

1. The broad concepts for employment of ECADs in civic action, as stated in the TOE, were found, in application in Vietnam, to be sound.

2. The advisory team TOE capability statement, however, does not provide sufficient flexibility to cover all types of operations conducted in the provinces. For instance, it does not cover certain capabilities, such as operations at split locations, that were tested and proven effective in increasing the value of ECAD operations in counterinsurgency.

3. The basis of allocation for advisory teams, as stated in the TOE, of municipality, exceeds probable requirements and should be reduced to no more than one per province or similar jurisdictional area.

4. The control team capability statement includes administrative support to subordinate advisory teams. This ability was found to be nonexistent and should be deleted from the capability statement.

B. OBJECTIVE 2 - ORGANIZATION AND EQUIPMENT

1. A few skill level requirements within the control team exceed the grade structure currently authorized, e.g., the construction inspector, E-7, actually acts as the operations sergeant of the engineer staff of the special action force headquarters, and should appropriately be rated E-8.

2. The control team's design capability must be increased in scope and quality to meet the demands of dealing with professional engineers in public works offices. The authorized drafting set is too small and needs replacement. A simple line drawing reproduction capability is also required.

3. A survey capability at control team level for common use of all teams is needed for verification and layout work. This calls for an additional space authorization on the control team portion of the TOE, and requires associated surveying equipment.

4. To preclude the necessity to rely on indigenous and co-located US units for transportation in normal operations, a second vehicle is required with each control and each advisory team.

5. The MOS structure of the advisory team does not support all responsibilities contained in the TOE capability statement. Rather than two construction foremen and two engineer equipment maintenance supervisors, the team should consist of one construction foreman, one engineer equipment maintenance supervisor, one combat construction foreman, and one public works utilities sergeant.

6. The lone pioneer equipment set authorized the advisory team served its purpose well but did not contain enough carpentry tools for the type of construction undertaken in Vietnam. An engineer platoon carpenter set will fill this requirement. A trailer-mounted electric tool set is also needed with the control team, for common use, to reduce construction time on high priority projects.

C. OBJECTIVE 3 - ADMINISTRATIVE SUPPORT

1. A typical special action force has better inherent capabilities to provide a support base for ECAD operations than does a MAAG, although advisory teams can function equally as well in either organization.

2. ECADs need imprest fund or contracting officer authority to support civic action projects. Limitations on expenditure will be governed by the amount of materiel, labor, and equipment assistance that can be obtained from local indigenous and US military and civilian agency resources.

3. No augmentation equipment nor personnel are required to back up ECAD operations. Organic equipment is basically adequate.

IV DISCUSSION

A. OBJECTIVE I - DOCTRINE AND PROCEDURES

1. Organizing, Supervising, Training, and Motivating Unskilled Labor

a. Unskilled Labor Sources. In the MAAG area of operations, some unemployed unskilled civilians were hired with ECAD funds. In other cases, unskilled people were either conscripted by village chiefs or volunteered at no cost to the US. On a few projects, gratuitous issues of wheat and cooking oil from USCM resources were given to unskilled laborers in payment for services.[6] Special forces advisory teams usually supervised unskilled civilians drafted by the local authorities or special forces associated paramilitary personnel assigned to strike forces units. In one case, a special forces advisory team did pay semi-skilled labor from ECAD imprest funds.[7]

b. Training Unskilled Personnel. Training of laborers was required on all ECAD construction projects. At TAN AN, a squad of civil guards received an eleven week course in "small engineer unit techniques in support of civic action construction and combat operations."[8] At CAO LAHN and LONG THANH, other Vietnamese soldiers received on-the-job training in operating a water jet drilling rig.[9] Training in construction methods was required in:

(1) Mixing and placing concrete: Quality control was instituted by building and using cubic-foot measuring boxes.[10] In one case, batching vats were constructed to preclude hand mixing of concrete on the ground or on sheet metal.[11] Monolithic placing and finishing procedures were taught to replace the common local custom of pouring in multiple lifts and topping by a rich surface mixture.[12]

(2) Use of block and tackle: The mechanical advantage of elementary rigging systems for lifting and placing heavy construction materials was demonstrated to unskilled laborers on many projects for the first time. On one project, two laborers were so amazed at the ease with which a heavy concrete culvert pipe could be lifted and lowered, that they repeated the process many times, much to the amusement of all persons present.[13]

6/ e.g., p C-39. 7/ p C-157. 8/ p C-46. 9/ pp C-60 and C-129. 10/ p C-12. 11/ e.g., p C-148. 12/ e.g., p C-181. 13/ e.g., p C-72.

(3) Use of hand tools: Vietnamese peasants are not accustomed to using common US hand tools. An "engineer eye" is used in place of a carpenter square, level, and plumb bob. Most American tools are heavier or have longer handles than the local tools. A "D" handled shovel blade holds more sticky rice paddy gumbo than the average slightly built Vietnamese farmer can handle. Such elementary techniques as the proper stance for holding a hand saw or a sledge also had to be demonstrated.14/

c. Motivation

(1) The photographs contained in Annex C attest to the fact that advisory teams can effectively organize, supervise, and train unskilled indigenous labor. With rare exceptions, skilled labor was not available for ECAD work.

(2) A well conceived and well designed project, which the local citizens felt they really needed, invariably brought motivated laborers to the job site. Additional school rooms and bridges are needed almost everywhere in Vietnam. Advisory teams, exercising their skills and knowledges, showed these citizen laborers shortcuts and sound construction procedures that resulted in handsome and worthwhile structures. This type success breeds additional success and future motivation..

(3) In one village, where a special forces ECAD sergeant was having difficulty in obtaining free labor, he started working on a foot bridge by himself. It was rice planting season, and sturdy backs were busy in the paddies. Soon, several children gathered around wanting to help. These were joined by a few old men and women. Together, they pitched in and completed the bridge.15/

(4) Although funds available for hiring and gratuitous issues of food contributed to motivation, drafted and volunteer unskilled personnel learned and worked equally as without compensation.

2. Command, Control, Operations, and Staff Responsibilities

a. MAAG Operations

(1) The commander of the 534th Engineer Detachment control team, attached to MAAG, reported to the Engineer, MAAG Advisory Team, IV Corps, in CAN THO. This office was located in a separate building from the corps engineer advisor, who monitored ECAD operations through a complete and detailed project status report submitted weekly by the control team commander. The engineer

14/ e.g., p C-88.

15/ pp C-163 and 164.

advisor did not excercise control over ECAD operations within the IV Corps Area, nor did he utilize the control team as an extension of his engineer staff. The three subordinate advisory teams were detached to MAAG units in proximity to MAAG sector advisors and the Vietnamese province chiefs, with whom the sector advisors are associated.

(2) The control team commander had over-all supervision of advisory teams, except in the important area of project assignment. In effect, the control team provided engineering and policy guidance and design support and monitored progress of advisory team operations. As-built drawings were prepared from some of the sketches used by the advisory teams to control construction. These drawings were furnished to province engineers for future use in maintenance of facilities.16/

(3) The provincial chief, through his US sector advisor, identified projects he considered necessary for the welfare of villages in his domain. Having this information in hand, the advisory team chief coordinated each project with district, village, or hamlet chiefs and those agencies from which support was required.17/ When it had been determined that the proposed project was appropriate, and terms of agreement for provision of materials, equipment, and labor had been reached, the advisory team commander initiated plans to commence work.

b. Special Forces Operations

(1) The acting commander of the 539th Engineer Detachment's control team reported to the Commander, Headquarters, USASFV. The two advisory teams were detached to special forces "B" detachments stationed in II and IV Corps areas.

(2) The control team acted as the engineer staff for Headquarters, USASFV. As such, it provided engineer planning and advice to the headquarters and special forces attached and assigned subordinate units. Monitoring of advisory team projects was accomplished by informal reports from the field.18/

16/ p C-100.

17/ Support provided by USOM, provincial engineers, local officials, and the Vietnamese Army is discussed generally under Administrative Support, Section IIIC, below, and in detail for each project included in Annex C.

18/ Informal letters from the advisory team chiefs to the control team commander proved of little value to the test team in checking progress, since projects were not identified by number, nor were all items of interest such as funding, current status, etc, covered. Special forces ECAD project numbers were assigned by the evaluation team to facilitate preparation of reports and to maintain project status.

The special forces control team chief sent weekly advisory team reports and copies of his daily log to the 539th ECAD commander, who remained in Okinawa. The control team exercised its design capability by preparing engineering drawings for use by contractors building camps for Vietnamese strike force units.[19] Contracting officers representatives were provided by the control team to "B" detachment and strike force camp contract construction projects. These were funded at approximately $23,000 and $7,800 respectively.[20]

(3) The two special forces advisory teams functioned differently in accordance with policies established by the special forces "B" detachment commander to which they were attached. Although some effort was made to initiate welfare and sanitation projects, nearly all work done in II Corps was in support of clear-and-hold operations and special forces cantonment areas. The advisory team in the IV Corps area, to the south, operated in somewhat the same fashion as MAAG advisory teams, in that the team chief coordinated civic action type project proposals with MAAG sector advisors and local officials, as well as with A and B special forces detachment commanders.

c. Security

(1) Province and district chiefs provided civil guard and self defense corps personnel for security of US personnel and labor forces employed. Security was provided as required on reconnaissance, proceeding to and from the job site, on the job site, and during the movement and temporary storage of supplies.[21] Work delays of 24 hours and more occurred when security forces were withdrawn temporarily to participate in anti-guerrilla operations. In a few instances, construction materials were pilfered from the job-sites.[22]

(2) As the ECAD projects increased in quantity and scope, Viet Cong activity was intensified. Work sites were boobytrapped;[23] ECAD personnel encountered small arms fire;[24] one bus load of civil guards on its way to a rendezvous with a work party was put out of action;[25] and construction supplies were damaged or destroyed by the Viet Cong.[26]

(3) Province chiefs were usually able to provide security, but for lack of security forces, two projects had to be reduced in scope to materials issue, only. After delivery of construction materials for two footbridges in a VC infested district, the province chief was unable to divert sufficient personnel to provide adequate security during construction. He, not the advisory team chief, cancelled the project at this point.[27]

19/ pp C-133 and C-173. 20/ pp C-173 and 177. 21/ pp C-3 through C-5.
22/ e.g., pp C-39 and 74. 23/ e.g., p C-43. 24/ e.g., pp C-10 and C-124.
25/ p C-37. 26/ p C-145. 27/ p C-14.

d. Evaluation of Team Operations

(1) Control Teams

Both control team commanders exerted minimum influence on advisory team operations. Mission assignment and control existed elsewhere. Remote locations of advisory teams and limited availability of utilities officers[28] reduced the control team commander's capability for on-site project inspection and guidance. Both control team commanders depended primarily on reports and visits from the field for knowledge of project status.

The control team commander, acting as special action forces engineer, does have the capability of exercising staff supervision over advisory team operations. As engineer, he can advise the special action force commander on the proper use of advisory teams and can use his staff to expedite construction supplies when appropriate. Further, he is equipped to provide operational and procedural guidance to advisory team commanders through either technical or command channels.

(2) Advisory Teams

Advisory teams operated independently from the standpoint of mission. Each team commander's measure of success could have been forecast by the amount of cooperation he was able to generate and receive from the provincial commander, province engineer, USOM representative, Vietnamese military authorities, and sector advisor or special forces detachment commander, as applicable in his area of operation.

Quality of construction varied from the very highest type to something less than satisfactory. All but four or five projects were a decided credit to ECAD capabilities. The amount of supervision given on the job site was directly proportional to the quality of the completed structure. When well trained engineer personnel lived in the hamlet temporarily or remained on the job site during all phases of construction, the results were invariably superior. When a project was inspected only periodically, due to security problems or for other reasons, quality suffered. In the few instances in which materials were merely issued, and the project received little or no attention from the advisory team, the unguided effort of unskilled workers resulted in incomplete or unsatisfactory work.

Advisory team personnel working directly with provincial authorities and US and Vietnamese technicians must be highly qualified professionally, tolerant of red tape and unfamiliar procedures, and should be mature in all

28/ Nonavailability of utilities officers is discussed in paragraph 5, this section.

respects. Insensitivity to such things as the possibility of professional jealousy or "loss of face" in dealing with well educated and experienced public works officials can seriously hamper the progress of a good civic action project. The importance of careful selection of personnel to man ECAD teams cannot be overemphasized.

3. Advising and Training Skilled Local Civilian and Military Engineer Forces

a. The design of a bridge at TAN AN originally called for Eiffel truss (clear-span) construction. The advisory team commander illustrated to the province engineer the ease with which the Viet Cong could destroy the structure. He proposed a single-single Bailey bridge with steel pile bents. The province chief and his engineer accepted the alternate design enthusiastically. Through the intercedence of MAAG, IV Corps, and ACTIV, the Vietnamese government released the bridge for erection under the supervision of the TAN AN advisory team. Unfortunately, the test was terminated with pile bents in place, and the bridge on site-but not launched.[29]

b. Special forces advisory team engineer maintenance specialists trained US and strike force personnel in 11 special forces detachment camps located throughout II Corps in "operations and maintenance of generators and small items of engineer equipment." Other generator maintenance training and assistance was conducted by MAAG associated teams.[30]

c. Special forces control and advisory team personnel acted as contracting officers representatives on construction of camps at NHA TRANG, PLEIKU, and DA NANG. The advisory team will supervise a contract construction project at PLEI DO LIM, and has overall supervision of a Navy Seabee Technical Assistance Team (STAT) along with strike force and indigenous civilian labor forces on a classified road clearing and drainage structure project.[31]

d. Not listed as specific projects are repair and adjustment of isolated items of public works construction equipment at CAN THO and KONTUM.

e. In the field of advising (supervising) skilled construction forces, the ECAD teams' most notable accomplishment was requiring contractors to conform to written specifications. This was not as easy as it sounds. Contractor personnel had to be shown how to mix, pour, and cure concrete correctly, and how to perform many simple construction tasks in accordance with US standards.

29/ pC-28. 30/ e.g., pp C-45, C-56 and C-123. 31/ pp C-125, C-133, C-173, and C-177.

4. Improved Design and Area Layout for Strategic Hamlets

a. During the course of normal operations, no requirements arose for ECADs to plan construction of strategic hamlets. In most cases hamlets merely emerge as a product of local customs, built by the displaced residents under supervision of the district chief.

b. A layout of a type strategic hamlet has been published by the Vietnamese Joint General Staff (JGS). The JGS layout is intended more as a basis for ordering fortification materials than for guiding individuals engaged in construction.

c. The evaluation team chief instructed the commander of the 534th ECAD to prepare a layout for an improved type strategic hamlet and engineering drawings of a few specific structures within the hamlet. A copy of the JGS layout was made available as a point of departure. Complete freedom of action was allowed in this test mission, other than a requirement for detailed drawings of hamlet entrances and fortification systems, and plans for a guard tower, dispensary, and pit latrine for Vietnamese use. Copies of design drawings, prepared by the 534th ECAD are included in Annex C.32/

d. Improved hamlet design drawings have been furnished the MAAG Strategic Hamlet Division in SAIGON for appraisal and possible use.

e. As organized, equipment and skill levels limit the design capability of the control team. Strategic hamlet drawings were prepared on an unauthorized drafting table and with borrowed instruments. This is discussed in more detail under paragraphs 1d and 2c, Section IV B.

5. Operation at Multiple Locations

a. One MAAG advisory team was split between TAN AN and CAO LANH. The control team utilities officer supervised one sub-team and the assigned advisory team chief the other. Each sub-team consisted of one officer, one maintenance specialist, and one construction foreman. These sub-teams experienced some difficulities in programming construction materials. This was not necessarily because they were short handed, but more because the areas in which they operated were void or short in the type supplies required.33/ Futher, no one seemed to be able to help them with their logistics problems.

b. Special forces advisory team chiefs set up a base, usually at the B detachment headquarters to which attached. Team personnel were then detached as individuals or in pairs to A detachments, as required. When work was completed in one area, team members were shifted to another detachment.

32/ pp C-101 through 107. 33/ e.g., p C-68

c. The utilities officer of the special forces control team was detached to DA NANG, where he served as contracting officer's representative supervising the construction of a B detachment camp, for the last half of the test period.

d. Operations at split locations can work well, since qualified engineer officers and construction NCO's with support of local military and civilian authorities, adequate security, and an interpreter can effectively supervise a group of Vietnamese unskilled laborers. Initial coordination and arrangements for materials are best accomplished by advisory team chief, backed up by an agency or base that can expedite or assist in procurement.

6. Design and Execution of Engineer Tasks Without Local Assistance

a. Father Tong, who governs the remote village of LONG PHU, on the MEKONG DELTA, asked if a modest street lighting project could be installed. He provided the lighting fixtures and poles. ECAD funds provided a main switch and main line. The special forces A detachment provided electricity from one of its 10KW generators. An advisory team member designed the circuits, and with the help of a team-mate installed the system 34/ Now children play in the streets after dark, and if the Viet Cong attacks and almost over runs the village as it did in February 1963, the area can be illuminated.

b. Control teams have an inherent capability to do a limited amount of engineering design work as currently organized. Design projects, accomplished without outside assistance have been discussed elsewhere.

c. The control and advisory teams at CAN THO live in the Hotel Trung-Chau "Lu Quan." The shower room floor upstairs sloped away from the drain. The floor flooded, and water dripped down the walls and through the ceilings of their rooms, below. ECAD personnel enjoined the manager of the hotel to correct the situation. He sadly shook his head, saying, "There is nothing that can be done about it. This old hotel was just built that way, and the local craftsmen don't know how to make water run up-hill." A bargain was struck. The manager agreed to furnish the materials, and the ECAD personnel agreed to correct the flooding condition free of charge on off-duty hours. This verbal contract, plus tightening a few leaky pipes, was accomplished in a couple of evenings. The hotel manager was delighted, and the teams slept and showered more comfortably for many nights afterwards.

d. Many wiring, rewiring, plumbing, refrigeration and engine driven equipment repair and minor construction projects were accomplished by advisory team personnel in special forces camps. A few similar "handy-man" type projects were accomplished by advisory team people attached to MAAG detachments. 35/

34/ p C-140. 35/ pp C-18, 56, 121, 122, 123, 130, 150, 154, 169, 189, etc.

7. Collection of Intelligence Information

a. Advisory teams demonstrated the ability to reconnoiter and report intelligence information on routes of communication and other items of engineer interest. One such report is shown in Figures 1 through 7, following.

b. Engineer intelligence information was presented to MAAG sector advisors for provincial commanders and ARVN and to special forces B detachment commanders. In one instance the information volunteered was not accepted, when the intended recipient declared "We already have this information." On the other hand, several special forces detachment commanders directed reconnaissance of routes of communication in connection with planned "clear-and-hold" and "resettlement" operations.[36] Associated reconnaissance reports were satisfactory to and acted upon by the detachment commanders.

c. ECAD personnel also provided combat intelligence information on VC activity. Most combat reports stemmed from encountering sporadic enemy fire or demolitions. In one case a construction sergeant reported a large contingent of approximately 100 VC in the vicinity of the hamlet, in which the sergeant was living.[37] On the basis of this and other reports, the provincial commander directed an operation against the VC force.

8. Adequacy of Section I of TOE 5-500, Change 13

a. Control Team Mission

TOE stated capabilities are: "Provides engineer staff personnel for the special action forces command and control element. Provides staff planning and coordination of subordinate units. Provides administrative support for subordinate teams."

The test has borne out the fact that the advisory team can be used effectively as an engineer staff of a special action forces control element. However, the statement, "Provides administrative support for subordinate teams" should be deleted. In CONUS, assigned personnel can be cross-trained to handle supply, personnel, administration, and associated items that make up administrative support, when control and advisory teams within the detachment are co-located and cooperatively engaged in a training program. When advisory teams are separated by great distances from the control team chief (detachment commander), however, no capability exists to provide administrative support. In the field, the control team should be required merely to exercise staff supervision over advisory teams.

36/ e.g., p C-128 (SF-1-10) and C-165. 37/ p C-148.

An example of the control team's inability to provide administrative support to the advisory teams is an incident in which it took 21 days for the MAAG control team to pay its subordinate advisory team personnel. Subsequently, advisory team chiefs were appointed class B agents.

b. Advisory Team Mission and Basis of Allocation

TOE stated capabilities are: "Advises indigenous engineer forces on civic action type projects such as farm-to-market roads, bridges, village wells and sanitation developments; construction of schools, hospitals or other type public buildings. Assists in preparing indigenous engineer units to support their own tactical troops for counterinsurgency roles. Assists and advises US Military Forces when committed in support of indigenous forces. Supervises operations with indigenous counterparts when required."

TOE stated basis of allocation is: "One per indigenous force comparable in size to a US Army Engineer Combat Battalion or one per municipal area for civic action as required."

In USACDC letter, referenced in paragraph 7, Annex B, the following ECAD mission guidance is given: "In furtherance of US policy, Engineer Detachments contribute significantly to support of vulnerable governments by providing supervision, training, advice, and operational assistance to indigenous military forces in performing civic actions. Participation by US ECADs in civic action tasks must basically be advisory in nature. Whatever the ECAD participation, however, it must be unobtrusive and not overshadow the efforts of the indigenous military forces which we are pledged to assist and also enhance in the eyes of the civilian population. In executing civic action it is envisioned that preponderantly indigenous military forces will be employed on projects useful to the local population at all levels in such civic action fields as education, training, public works, agriculture, transportation, communication, health, sanitation and others contributing to economic and social development. It is not intended that ECAD assistance be in all cases limited to indigenous military forces. Socio-economic, military, and other exigencies may dictate that indigenous civilian agencies also be assisted. All such assistance must be coordinated with US AID and other agencies in the objective area. Civic action programs must, whenever possible, have the support of, or be subscribed to by, the highest officials of the civil government ... request your report on the ECAD test contain a discussion of deviations from the above concept, including local conditions necessitating such deviations."

Trained indigenous engineer forces operating in support of counterinsurgency will always be at a premium. Engineer units will be used to support combat operations first - not civic welfare. Vietnamese army engineer units are fully committed to combat support, except for those battalions engaged in the strategic road program. In Vietnam, engineer battalions have a MAAG officer advisor assigned. Superimposing an ECAD advisory detachment for civic action would present an unbalanced structure.

The ACTIV ECAD Test Plan emphasized the importance of ECADs in civic action. Considering the situation in Vietnam, the approach taken was to place advisory teams where they could best be utilized in a civic action role. Except for ceremonies held in one operational area to celebrate the completion of a group of good construction projects, ECAD accomplishments have been subdued and subjugated to the aggrandizement of the unskilled laborers who worked on the projects and the local officials who recommended and supported the projects. In the case of the celebration, provincial, district, village and hamlet officials participated and presided. If the federally appointed local officials can rally the enthusiasm and support of the people, it follows that the central government gains additional adherents.

The ECAD test deviated from written conceptual statements of mission only insofar as emphasis on advising civilian rather than military engineer forces in support of civic action is concerned. When "vulnerable governments" reach the point that they can divert Army military effort toward civic action, they should be encouraged to do so. This would be much along the lines that the ECAD teams have operated in Vietnam. Moving into a remote village to supervise and to support a self help project which has been coordinated with all interested public officials, accomplishes more than the mere erection of a suitable structure. It impresses an unskilled civilian labor force with some new ideas about how to use tools and some sound construction practices. Economic, educational, or sanitation welfare benefits are almost immediate.

The logical basis of allocation for teams engaged in a civic action role in Vietnam is no more than one per province. One per municipality as stated in the TOE, would be excessive. Areas of operation for ECAD advisory teams in other possible objective areas would probably not differ greatly from those of Vietnam.

9. Findings - Objective 1 - Doctrine and Procedures

a. Operational concepts developed for EACDs in support of civic action in counterinsurgency are basically sound. Advisory teams have the capability to organize, train, and motivate unskilled military and civilian labor on modest construction projects. They can also effectively assist public works personnel with more sophisticated structures and accomplish small tasks without outside assistance.

b. The control team TOE capability statement should delete reference to "administrative support of subordinate teams" and be revised to read: "Provides engineer staff personnel for the special action forces command and control element. Provides staff planning and coordination of advisory team operations."

c. To increase flexibility and include inherent capabilities, the TOE capability statement for advisory teams should be revised to read: "Advises indigenous military and civilian authorities on civic action construction type

projects, such as: farm-to-market roads, bridges, village wells and sanitation developments, schools, hospitals and other type public buildings. Assists in preparing indigenous engineer units to support their own tactical units in counterinsurgency operations. Assists and advises US military forces when committed in support of indigenous forces. With counterparts, supervises indigenous forces engaged in civil action projects, as required. Can operate at multiple locations on small construction projects, and collect intelligence information on routes of communications and other items or engineer interest, if required."

d. Advisory team basis of allocation statement in the TOE should be revised to read: "One per indigenous force comparable in size to a US Army engineer battalion, or no more than one per province or similar jurisdictional area, for civic action, as required."

e. Only a limited engineering design capability exists within the control team. This should be improved to increase the amount of assistance that can be offered indigenous professional engineer personnel in public works construction.

FIGURE 1

ROAD RECONNAISSANCE REPORT
(FM 5-36)

DATE: 21 August 1963

TO: (Headquarters ordering reconnaissance)
Commanding Officer
534th Engr Det

FROM: (Name, grade and unit of officer or NCO making reconnaissance)
Van R Bonnewitz Capt [illegible]

1. MAPS	a. COUNTRY	b. SCALE	c. SHEET NUMBER OF MAPS	2. DATE/TIME GROUP (Time signature)
	Vietnam	1:50,000	6142 III	2111 [illegible] Aug 63

SECTION I - GENERAL ROAD INFORMATION

3. ROAD GRID REFERENCE		4. ROAD MARKING (Civilian or Military number of road)	5. LENGTH OF ROAD (Miles or kilometers, specify)
FROM	TO		
WS711504	WS684574	UNK	8.2 Km

6. WIDTH OF ROADWAY (Feet or meters, specify)	8. WEATHER DURING RECONNAISSANCE (Include last rainfall, if known)
3-3.5 Meters	Hot, Damp, 90°F, Last Rain - 19 Aug 63

7. RECONNAISSANCE	
DATE	TIME
20 Aug 63	0800-1200

SECTION II - DETAILED ROAD INFORMATION (When circumstances permit more detailed information will be shown in an overlay or on the mileage chart on the reverse side of this form. Standard symbols will be used.)

9. ALINEMENT (Check one ONLY)		10. DRAINAGE (Check one ONLY)	
	(1) FLAT GRADIENTS AND EASY CURVES	X	(1) ADEQUATE DITCHES, CROWN/CAMBER WITH ADEQUATE CULVERTS IN GOOD CONDITION
	(2) STEEP GRADIENTS (Excess of 7 in 100)		(2) INADEQUATE DITCHES, CROWN/CAMBER OR CULVERTS, ITS CULVERTS OR DITCHES ARE BLOCKED OR OTHERWISE IN POOR CONDITION
	(3) SHARP CURVES (Radius less than 100 ft (30m))		
	(4) STEEP GRADIENTS AND SHARP CURVES		

11. FOUNDATION (Check one ONLY)			
X	(1) STABILIZED COMPACT MATERIAL OF GOOD QUALITY		(2) UNSTABLE, LOOSE OR EASILY DISPLACED MATERIAL

12. SURFACE DESCRIPTION (Complete items 12a and b)			
a. THE SURFACE IS (Check one ONLY)			
X	(1) FREE OF POTHOLES, BUMPS, OR RUTS LIKELY TO REDUCE CONVOY SPEED		(2) BUMPY, RUTTED OR POTHOLED TO AN EXTENT LIKELY TO REDUCE CONVOY SPEED
b. TYPE OF SURFACE (Check one ONLY)			
	(1) CONCRETE		(6) WATERBOUND MACADAM
X	(2) BITUMINOUS (Specify type where known):		(7) GRAVEL
			(8) LIGHTLY METALLED
	(3) BRICK (Pave)	X	(9) NATURAL OR STABILIZED SOIL, SAND CLAY SHELL CINDERS, DISINTEGRATED GRANITE, OR OTHER SELECTED MATERIAL
	(4) STONE (Pave)		(10) OTHER (Describe):
	(5) CRUSHED ROCK OR CORAL		

SECTION III - OBSTRUCTIONS (List in the columns below particulars of the following obstructions which affect the traffic capacity of a road. If information of any factor cannot be ascertained, insert "NOT KNOWN")
(a) Overhead obstructions, less than 14 feet or 4.25 meters, such as tunnels, bridges, overhead wires and overhanging buildings.
(b) Reductions in road widths which limit the traffic capacity, such as craters, narrow bridges, archways, and buildings.
(c) Excessive gradients (Above 7 in 100)
(d) Curves less than 100 feet (30 meters) in radius)
(e) Fords

SERIAL NUMBER a	PARTICULARS b	GRID REFERENCE c	REMARKS d
1	Narrow Bridge - 3m	WS705518	
2	Narrow Bridge - 3m	WS695542	
3	Narrow Bridge - 3m	WS694549	

DA FORM 1 JUL 60 1248 PREVIOUS EDITION OF THIS FORM IS OBSOLETE.

FIGURE 2

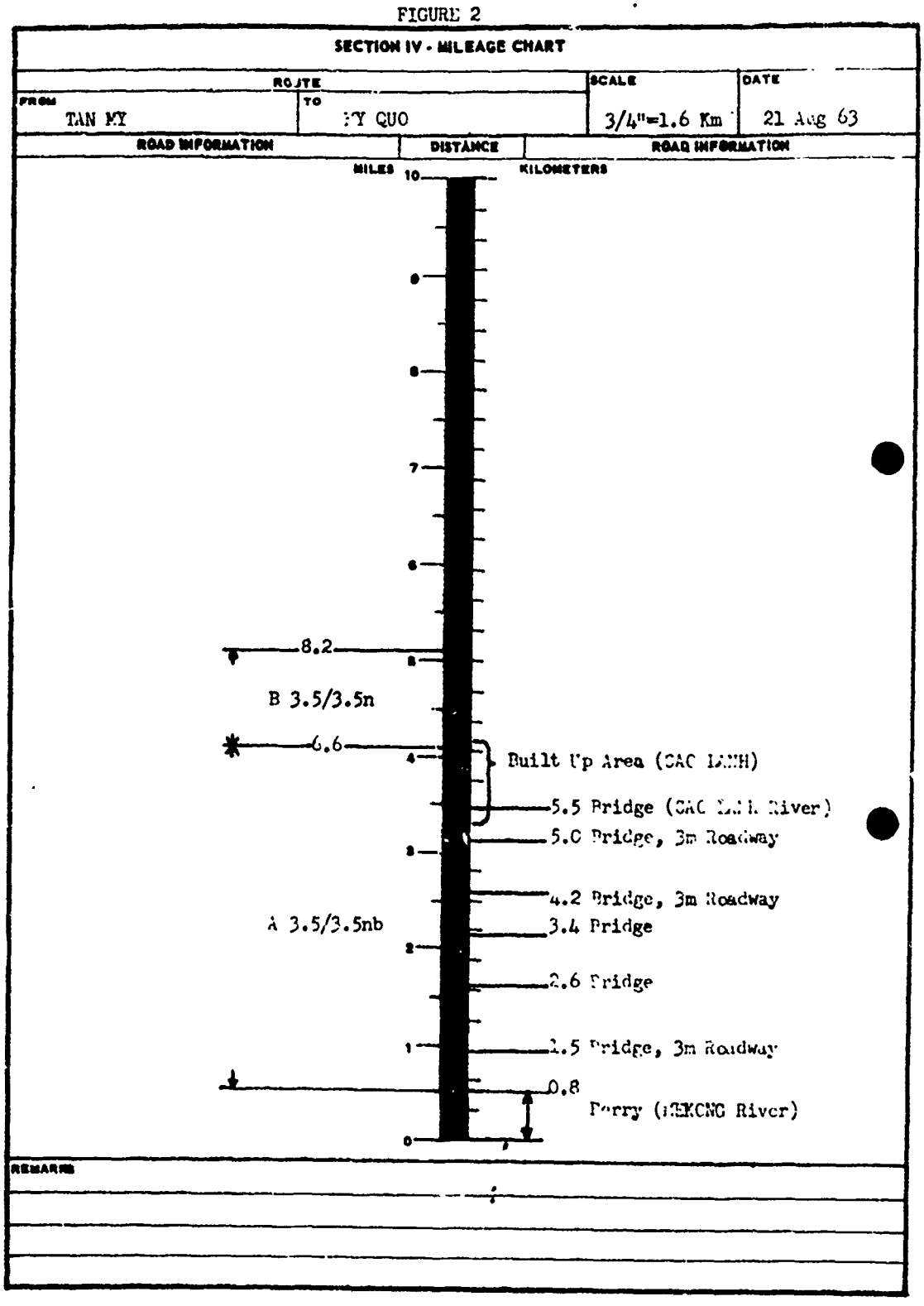
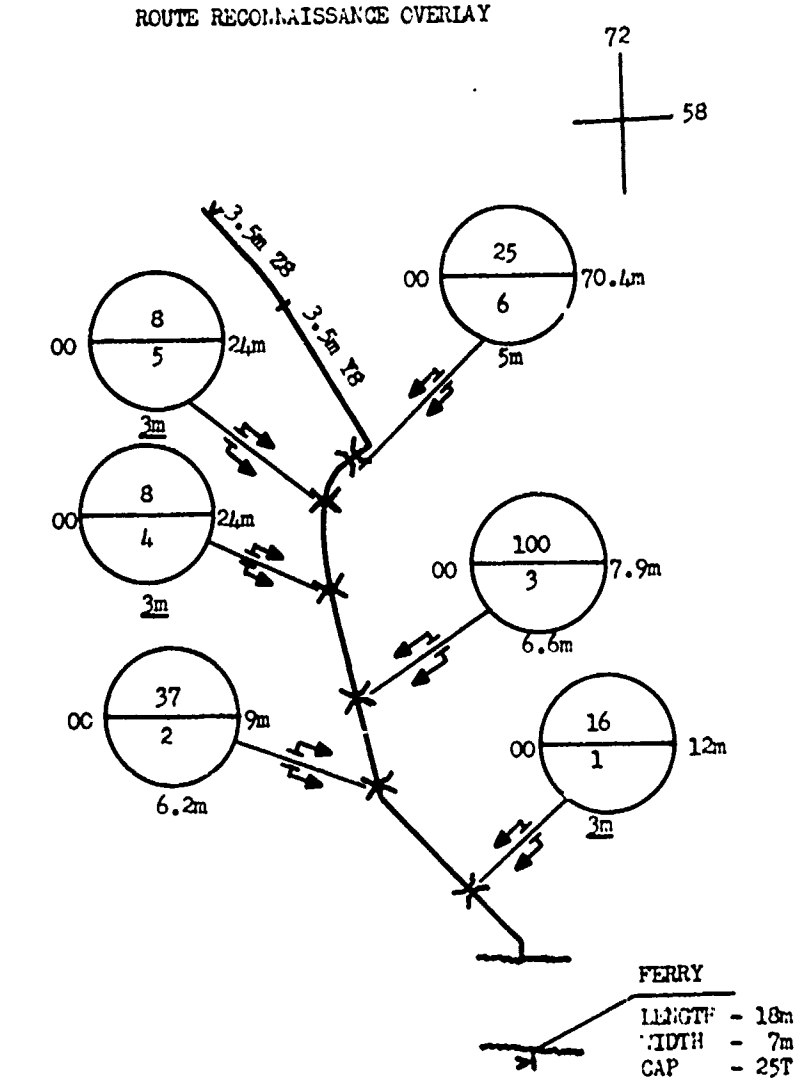
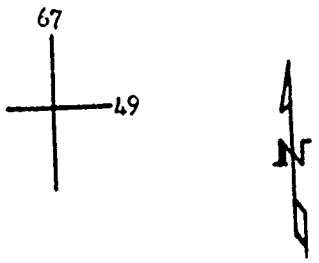

SECTION IV - MILEAGE CHART
ROUTE
FROM
TAN MY
TO
:Y QUO
SCALE
3/4"=1.6 Km
DATE
21 Aug 63
ROAD INFORMATION
DISTANCE
ROAD INFORMATION
MILES
KILOMETERS
10
9
8
7
6
5
4
3
2
1
0
8.2
B 3.5/3.5n
6.6
Built Up Area (CAC LANH)
5.5 Bridge (CAC LANH River)
5.0 Bridge, 3m Roadway
4.2 Bridge, 3m Roadway
A 3.5/3.5nb
3.4 Bridge
2.6 Bridge
1.5 Bridge, 3m Roadway
0.8
Ferry (MEKONG River)
REMARKS

FIGURE 3

ROUTE RECONNAISSANCE OVERLAY





Van R Bonnewitz, Capt
KB#2A, 534th Engr Det
21 Aug 63
Vietnam - 6142III
1:50,000

FIGURE 4

FERRY RECONNAISSANCE REPORT
(FM 5-36)

DATE: 21 August 1963

TO: (Headquarters ordering reconnaissance)
Commanding Officer
534th Engineer Detachment

FROM: (Name, grade and unit of reconnaissance officer)
Van R. Bonnewits
Captain, KB#2A

1. ROUTE OR LINE		2. FROM (Initial Point)	3. TO (Terminal Point)	4. DATE/TIME (Of Signature)
HIGHWAY: VKN	RAILROAD:	TAN MY	TAN TICH	211000Aug63

5. MAP SERIES NR	6. SHEET NUMBER	7. GRID REFERENCE		8. FERRY NR	9. CLASS
		TYPE	COORDINATES		
L701	6142 III	UTM	WS710508		

10. LOCATION FROM NEAREST TOWN			11. CROSSING (Name of stream or body of water)
DISTANCE	DIRECTION	NAME OF NEAREST TOWN	
4.7 Km	South	CAO LANH	MEKONG RIVER

12. LIMITING FEATURE (Condition of vessels, terminals, floods, low water, freezing, tides etc.) (Base me and Dates)
Capacity of float - 5 tons Turntable dimensions 5.3m X 2.7m

13. WATER LEVELS (Depths)			14. CROSSING TIME	15. LENGTH
LOW	MEAN	HIGH		
	15m		10 min	800m

16. VESSEL FEATURES (Attach photographs)

UNITS	CONSTRUCTION TYPE	PROPULSION METHOD			LENGTH	BEAM	DRAFT	TONNAGE		CAPACITY		
		TYPE	UNITS	HP				GROSS	NET	PASS	VEHICLE	R.R. CARS
1	Open	DSL	1	75	18m	7m	0.6m	VKN	25	50	3-2½ T 3-¼ T	NA
1	Open	DSL	1	50	10m	4m	0.6m	VKN	11	25	1-2½ T 1-¼ T	NA

17. TERMINAL FEATURES

DIRECTION OF BANK	NAME	SLIP			DOCKING FACILITIES	APPROACHES				
		WIDTH	DEPTH	CAPACITY		HIGHWAY			RAIL OAD	
						SURF	LANES	CLASS	TRACKS	SIDING
N ● S ● N	TAN MY	10m	4m	1 Boat	Good	ASPH	2	8	NA	-
N ● S ● N	TAN TICH	10m	4m	1 Boat	Good	ASPH	2	8	NA	-

18. REMARKS (Amplify above details. Note obstructions, navigational and other pertinent data)

Tide Fluctuation:

Jan - Jun 0.40m

Jul - Dec 1.50m

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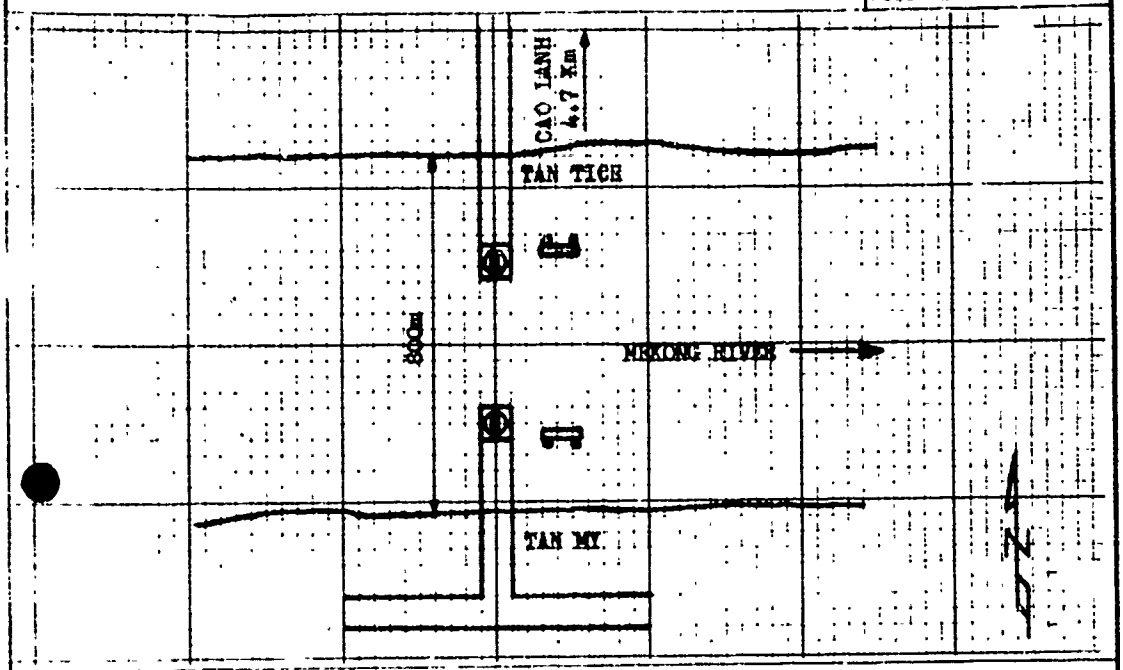
FIGURE 5

19 ROUTE ALINEMENT PLAN (Indicate route, terminals, approaches, obstructions, navigational aids, direction of current; north arrow)

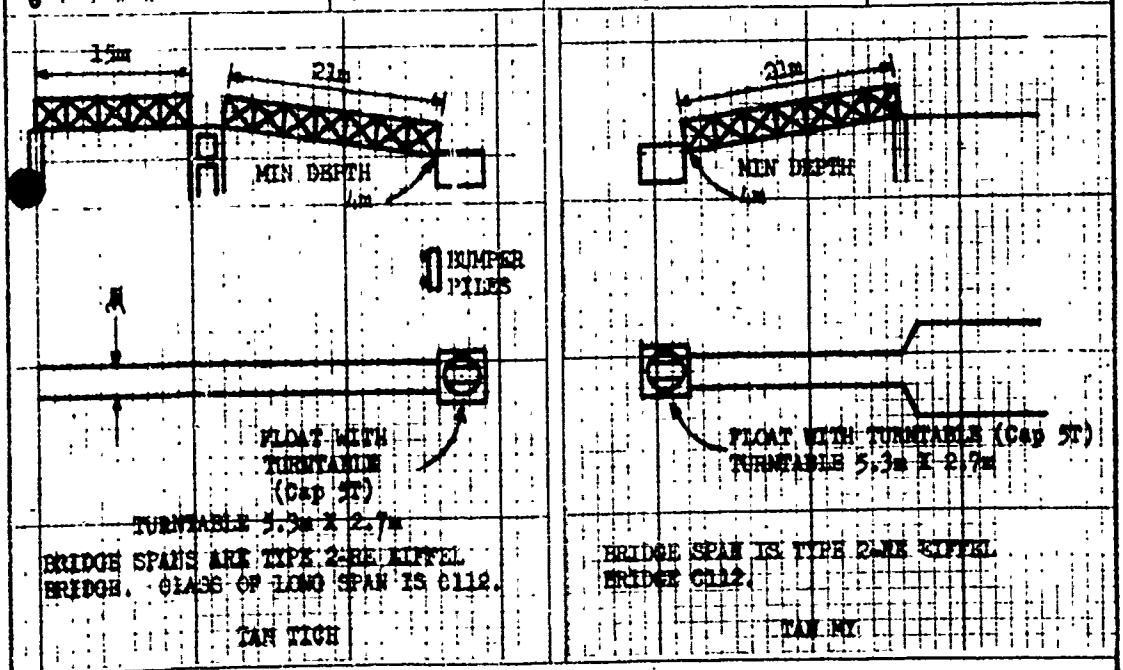
SCALE 1 SQUARE = NONE



21 TERMINAL VIEWS (Indicate slips, ramps, piling, direction of bank)

(Circle) SCALE 1 SQUARE = NONE

BANK (Circle) N E W N SCALE 1 SQUARE = NONE



21. REMARKS - ATTACH PHOTOGRAPHS

FILM NOT AVAILABLE FOR PHOTOGRAPHS.

☆ U S GOVERNMENT PRINTING OFFICE 1955 O-- 329982

FIGURE 6

BRIDGE RECONNAISSANCE REPORT (FM 5-36)

DATE: 21 August 1963

SIGNATURE: Van R. Bonnewitz, Captain

TO: (Headquarters ordering reconnaissance): Commanding Officer, 534th Engineer Detachment

FROM: (Name, grade, and unit of officer or NCO making reconnaissance): Van R. Bonnewitz, Captain, FB/2A

MAP: (Country, scale and sheet number or name): Vie. ..., 1:50,000, Sheet No. 6142 III

DATE/TIME GROUP (Of signature): , 211100 Aug 63

ESSENTIAL BRIDGE INFORMATION

1 SERIAL NO.	2 LOCATION	CLEARANCE 3 HORIZONTAL	CLEARANCE 4 UNDER-BRIDGE	SPANS 5 NUMBER	SPANS 6 TYPE OF CONSTRUCTION	SPANS 7 TYPE OF CONSTRUCTION MATERIAL	SPANS 8 LENGTH AND CONDITION	ADDITIONAL BRIDGE INFORMATION (Add comments as needed) (Military load class, overall length, roadway width, vertical clearance, bridge by-pass) Military Load Class	Bridge By-Pass	Remarks
1	WS705518	3.3m	1.5m	1	1	a	12mw	16	12m 3m 00	Impossible
2	WS698527	00	1m	2	5	p	3.65mw	37	9m 6.2m 00	Impossible
3	WS697534	00	1.5m	2	4	k	2.6mw	100	7.9m 6.6m 00	Impossible
4	WS695542	3.3m	2.0m	1	1	a	24mw	8	24m 3.0m 00	Impossible
5	WS694549	3.3m	1.5m	1	1	a	24mw	8	24m 3.0m 00	Impossible

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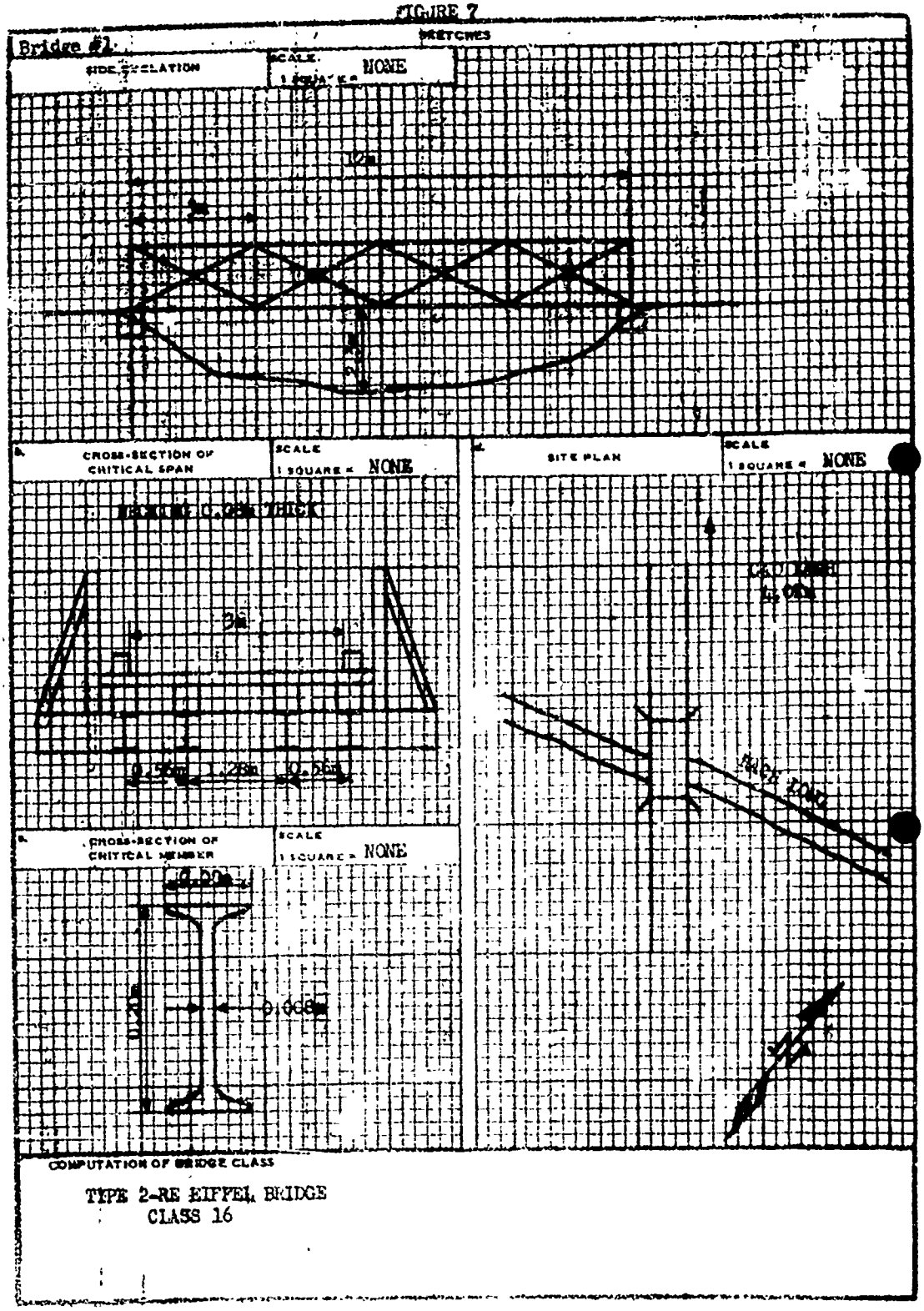
FIGURE 7



TYPE 2-RE EIFFEL BRIDGE
CLASS 16

B. OBJECTIVE 2 - ORGANIZATION AND EQUIPMENT

1. Application of Military Skills. Reference Section II, Organization, TOE 5-500, with Change 13, 25 February 1963.

a. Current control team organization reads, in part, as follows:

PAR	LINE	DESIGNATION	MOS	GRADE	FULL STRENGTH
01		Team, KA, engineer control			
	01	Staff Engineer	7010	O-4	1
	02	Public works utilities officer	7020	O-3	1
	03	Construction inspector	51879	E-7 NC	1
	04	Clerk typist	71120	E-4	1
	05	Draftsman, construction	81110	E-4	1

b. The construction inspector acts as an engineer staff operations sergeant of a special action force headquarters. AR 611-201, Standards of Grade Authorization, states that E-8 is authorized for MOS 518.8 "when this position is authorized in headquarters of engineer battalion, group, or comparable headquarters primarily concerned with construction or similar work." Each advisory team is authorized 2 E-7s, and a control team will normally supervise from 4 to 9 advisory teams. Responsibilities and duties, as well as skills and knowledges, required, are such that only a noncommissioned officer having the experience of an E-8 can carry out this assignment effectively. This position should be upgraded to operations sergeant, MOS 518.8, E-8.

c. Consideration should be given to upgrading the clerk typist to E-5. He is the only clerk assigned to the ECAD, but he performs the duties of a senior clerk typist. Each of the advisory teams furnished periodic information for reports, orders, status charts, funding operations, etc. This clerk must possess the skills and knowledge required of a senior clerk typist, in order to monitor, collate, and program the submission of this information to the control team chief. He must have the ability to organize the administrative efforts of all subordinate advisory teams to insure a smooth administrative operation with a minimum of guidance and supervision. He will be responsible for the administrative efforts of from 4 to 9 advisory teams. This calls for the skill and knowledge level associated with a senior clerk typist, MOS 711.2, E-5.

d. It was found during this test and evaluation period that the draftsman was required to develop original structural designs for bridges, camp facilities, and other projects. According to the TOE, the draftsman is expected to deal with public works technicians on major public works projects. In this connection the draftsman should be capable of producing work of a quality equal to or better than that of his civilian counterparts. One control team construction draftsman had previous civilian experience in structural design and architecture. Without this background, he would have found it impossible to carry the requirements placed on him. He actually produced the work normally expected

of a design draftsman MOS 811.7. The standards of grade authorization, AR 611-201, support this grade "when authorized in engineer brigade headquarters or similar or higher level unit." The design draftsman on the other control team produced engineering drawings for a standard strike force camp. This entailed original research into Vietnamese customs and requirements. He also was kept busy full time designing lesser projects. The skills and knowledge required for this position call for a design draftsman MOS 811.1, E-7.

e. Advisory team chiefs have unanimously stated a requirement for a survey capability, and have recommended that a theodolite be made available at control team level for common use by all teams -- with or without a surveyor. Although AR 611.101 states that the team chief's MOS-civil engineer-entails a knowledge of surveying, a theodolite should always be accompaied by a separate surveyor, if only to have someone to maintain it. The theodolite would be used for layout and checking layout of large, important public works structures, and for accurate measurement of horizontal angles, as well as gradients. Instruments and trained survyeors are uncommon in Vietnam. Contractors will frequently "eyeball in" grades and make horizontal measurements with steel tape or string rather than go to the trouble of obtaining the services of surveyors. To insure quality construction, a theodolite at the control team level for common use is a justifiable requirement. However, even if there were the maximum of 9 advisory teams in the ECAD, and assuming most of them would be engaged in small, unsophisticated projects, neither a theodolite nor a surveyor could be used full time. A proposal contained in paragraph 2k, below, this section, which calls for the authorization of an electric tool set, trailer mounted, with the control team for common use, provides a basis for justification of an additional man on the control team. This man could be a surveyor cross-trained on the electric tool set. On this basis, a construction surveyor, MOS 821.1, E-4, should be added to paragraph 1, Section II, of the TOE.

f. Current advisory team orgainzation reads, in part, as follows:

PAR	LINE	DESIGNATION	MOS	GRADE	FULL STRENGTH
02		Team, KB, engineer advisory			
	01	Civil engineer	7900	O-3	1
	02	Construction inspector	51878	E-7 NC	1
	03	Engineer equipment maintenance supervisor	62278	E-7 NC	1
	04	Assistant engineer equipment maintenance supervisor	62268	E-6 NC	1
	05	Construction foreman	51868	E-6 NC	1

g. Most engineer equipment maintenance supervisors worked outside their MOS during much of the test period. They were used as handyman, performing such tasks as truck driver, carpenter, electrician, plumber, imprest fund clerk, and general mechanic. A few maintenance specialists, with previous experience in the field, were used as construction supervisors. Two were in charge of well

drilling operations. Almost the only time that maintenance supervisors had the opportunity to work in their field was in repairing a few small generators and pumps. Only one functioned in his specialty full time.38/ ECAD operations were oriented almost entirely toward small projects, which did not require construction equipment. If the advisory team were assigned on the TOE basis of one per indigenous engineer battalion engaged in civic action, the second maintenance supervisor would still be excess to requirements. The assistant engineer maintenance supervisor, paragraph 02, line 04, can be deleted in favor of adding another MOS more valuable to the ECAD effort.

h. It was found throughout the test period that the advisory team capability would be greatly enhanced by the addition of a utilities foreman, MOS 524. Construction projects such as hospitals, schools, and camps require the assignment of a man possessing knowledge of electricity, sanitation, water supply, plumbing, refrigeration, and general utilities. He must be capable of supervising and advising installation and repair of utility systems. He must have the skills necessary to determine adequacy of equipment and materials for the project involved. This man must know details of the techniques, duties, and procedures, since he will encounter unskilled personnel assigned utilities tasks in the objective area. This MOS would replace the assistant engineer maintenance supervisor per discussion in preceding paragraph, and requires a public utilities sergeant, MOS 524.6, E-6.

i. Consideration should also be given to replacing the construction foreman with a combat construction foreman, MOS 121, in order to meet the TOE capability requirement to assist indigenous engineer forces in support of tactical troops. He would give the team the benefit of his specialized knowledge of combat principles, employment of individual and crewserved weapons, minefields and booby traps, intelligence collection, and field expedients in the construction of roads, bridges, and fortifications. A review of the photographs in Annex C reveals that most of the small civic action projects undertaken are within the design and supervisory capability of a combat construction foreman. In summary, this addition to the advisory team would substantially outweigh the loss of the construction foreman. Paragraph 02, line 05, of the TOE should be revised to authorize a combat construction foreman, MOS 121.6, E-6.

2. Application of Equipment. Reference Section III, Equipment, TOE 5-500, with change 13, dated 25 February 1953.

a. Control team mission equipment, currently authorized, is as follows:

Line Item	Item Description	Quantity
226880	Drafting and duplicating set, small sketch notes and orders	1
248450	Level, survey Abney	1
457190	Trailer, cargo, 3/4-ton	1

38/ C-122 through 124

460080	Truck, cargo, 3/4-ton, with winch	1
575900	Typewriter, non-portable, 11-inch carriage	1

b. Advisory team mission equipment, currently authorized, is as follows:

Line Item	Item Description	Quantity
457190	Trailer, cargo, 3/4-ton	1
460080	Truck, cargo, 3/4-ton, with winch	1
569151	Tool kit, automotive maintenance	2
571000	Tool kit, pioneer, squad	1

c. Design drafting accomplished during the test was done with borrowed equipment by both control teams. The type of work performed requi[illegible] larger and more complete equipment than that authorized. The 21X16-inch [illegible] wing board, the 18-inch T-square, and other miniaturized equipment in the authorized set proved to be of little or no value. The types of items borrowed for the test period can be found in the battalion-size drafting equipment set. The battalion set is considerably heavier than the sketch set. However, the weight should not be a serious detriment as there should be no need to air drop the drafting equipment and the control team has the capability to transport a battalion-size drafting set.

d. Although the authorized drafting set item description indicates that a small sketch reproduction capability is available, the equipment once used for the purpose is no longer issued with the set. Control teams had numerous legitimate demands for reproduction of original drawings. This was normally accomplished by trading off something the local province engineer needed for the use of his blueprint facilities. The small and simple reproduction set, black-and-white process, for drawings and tracings in the field, FSN 3610-174-5269, will fill the control team's reproduction requirements satisfactorily.

e. Since the advisory teams have no similar type of instrument authorized, it is assumed that the Abney level issued to the control team is for the common use of all teams. Advisory team chiefs have stated a requirement for an Abney level on permanent retention for use on appropriate grade determination and layout problems, and that a theodolite be made available to the control team for common use where increased accuracy and measurement of horizontal angles and distances is required. Requirement for a survey capability is discussed in foregoing paragraph 1e, this section. The overall requirement can be met by deleting the Abney level from the control team equipment list and placing it on the advisory team list. A theodolite should be made available to the control team for common use throughout the detachment.

f. Transportation of construction materials was a continuing and critical problem, since ¼-ton utility vehicles were issued to the ECADs in lieu of authorized 3/4-ton trucks for the test.39/ Whether the vehicle is rated at 1/4-ton or 3/4-ton, one truck per team is inadequate. The control team needs a vehicle for staff supervision of engineer operations, operations at split locations, and for coordination and reconnaissance. The second vehicle can be fully utilized in expediting supplies for subordinate teams and for other administrative purposes. The advisory team needs a vehicle for coordination and supervision of operations at multiple locations and for reconnaissance. Another vehicle is needed for movement of construction materials and for administrative runs. ECAD teams in Vietnam were continually dependent on co-located US units and indigenous agencies for transportation. Although occasional heavy vehicles may be required, these could be borrowed or hired from one source or another, but continual reliance on associated indigenous and US military or civilian agencies is not in the best interests of the service. The control team needs a ¼-ton utility vehicle with a ¼-ton trailer, as well as the authorized 3/4-ton truck with winch.40/ Advisory teams need a ¼-ton truck with trailer plus the 3/4-ton truck and trailer now authorized.

g. Although an informal reporting system is desirable, it is doubtful that a special action force commander, responsible for support of unconventional warfare operations, will be satisfied with less information on reports covering ECAD civic action activities than: project description, location, beneficiary, starting or estimated starting date, completion or estimated completion date, and cost data. This information cannot be tabulated on standard issue 8X10½-inch paper. Issue 8X13 paper, turned edgewise, barely accommodates this type report. A larger typewriter, with at least a 14" carriage, is required for the control team clerk.

h. Reference data available to ECAD personnel was limited to FMs, TMs, and personally procured engineering handbooks. In undertaking work in association with province engineers and public works officials, more technically detailed and complete references are required. Book set, engineer construction group, would have satisfied engineering problems encountered during the test. This set should accommodate technical reference requirements in most objective areas. Basis of issue should be one set per control team for common use.

i. If the assistant engineer equipment maintenance supervisor is deleted in Section II of the TOE,41/ there is no need for one of the two automotive maintenance tool kits authorized in Section III.

39/¼-ton vehicles were issued in lieu of 3/4-ton vehicles to permit intra-theater movement of unit transportation by US Army caribou aircraft.

40/See paragraph 2k, this section, for basis for deletion of control team's 3/4-ton trailer.

41/See foregoing paragraph 1g, this section on excess engineer equipment maintenance supervisor.

j. The authorized pioneer equipment set was a valuable asset to the advisory teams during the test, but it does not contain sufficient carpentry tools to supplement those that could be made available by unskilled laborers from their own resources. This type shortage was usually compensated for by the expenditure of imprest funds, or by independent "out-of-pocket purchases." Neither approach is a satisfactory solution to this shortage of carpentry tools. Before presenting the action necessary to correct the shortage, it should be stated that commissioned and noncommissioned officers participating in the test maintained a unanimous position on disposition of tools. After they had trained unskilled laborers in the use of unfamiliar tools, they felt that these tools should be left in the hands of these laborers for future use. Advisory teams need to be authorized an engineer platoon carpenter tool kit.

k. A sound approach to ECAD support of civic action is to place emphasis on modest useful structures, which can be built with common hand tools from locally available materials. However, there will be occasions, when time required for construction will be of the essence. One lightweight item of equipment, capable of performing many types of construction operations rapidly, is the tool outfit, portable electric, for pioneer and construction work, trailer mounted. Many ECAD personnel have remarked on how the sweat ran, as unskilled carpenters trimmed the decking overhang to a neat line with hand-band saws of Vietnamese origin or a two man saw from the pioneer chest. One of these electrical tool sets issued to the control team for use throughout the ECAD will suffice. Its trailer can be towed by the control team's organic 3/4-ton truck, if the authorized 3/4-ton trailer is deleted.

l. To produce power for the electrically operated tool outfit, a 3 K., 120., single-phase, skid-mounted generator is required. This generator is accommodated within the framework of the trailer mounted tool set, but is a separate item of issue.

m. Control teams will normally be located at or near a point where medical facilities are available. Advisory teams, especially when operating at multiple locations probably will not. An individual aid kit was recently tested successfully by the Combat Development and Test Center, Vietnam.[42/] It was designed for use by personnel in small special action force units operating independently in separate and remote locations. This individual aid kit adequately handles many types of injuries, wounds, and illnesses, when administered by personnel trained in its use. It will be very useful for injuries on the jobsite, as well as combat emergencies. Advisory teams need training in and authorization for such an aid kit on a one per individual basis. Control teams need three, total, for personnel engaged in reconnaissance and other operations in hostile areas.

3. Findings - Objective 2 - Organization and Equipment. Sections II and III of Change 13 to TOE 5-500 should read, in part, as follows:

42/ Reference data is indicated at paragraph 8, Annex B.

SECTION II ORGANIZATION

PAR	LINE	DESIGNATION	MOS	GRADE	FULL STRENGTH
01		Team, KA, engineer control			
	01	Staff engineer	7010	O-4	1
	02	Public works utilities officer	7020	O-3	1
	03	Operations sergeant	51888	E-8 NC	1
	04	Design draftsman	81110	E-7	1
	05	Construction surveyor	82110	E-5	1
	06	Senior clerk typist	71120	E-5	1
02		Team KB, engineer advisory			
	01	Civil engineer	7900	O-3	1
	02	Construction inspector	51878	E-7 NC	1
	03	Engineer equipment maintenance supervisor	62278	E-7 NC	1
	04	Combat construction foreman	12168	E-6 NC	1
	05	Public utilities sergeant	52468	E-6 NC	1

SECTION III EQUIPMENT

PAR	ITEM NUMBER	ITEM DESCRIPTION	QUANTITY
01		Team, KA, engineer control	
	222752	Compass...	5
	226900	Drafting equipment set, battalion	1
	232940	Flashlight...	5
	235205	Generator set, GED, 3KW, AC, 0.8 power factor, 120V, single phase, 2 wire service...60 cycle operation, air cooled	1

PAR	ITEM NUMBER	ITEM DESCRIPTION	QUANTITY
01		Team KA, engineer control (Continued)	
	283805	Theodolite, surveying, directional, 0.1 seconds graduated, Wilde Model T-16	1
	285955	Tool outfit, portable, electric tools for pioneer and construction work, trailer mounted	1
	401088	Bayonet...	5
	401248	Binocular...	1
	429380	Pistol...	2
	435965	Rifle...	3
	457110	Trailer, cargo, ¼-ton, 2-wheel	1
	460080	Truck, cargo, 3/4-ton...	1
	461790	Truck, utility, ¼-ton 4X4	1
	465380	Wristwatch ...	5
	510320	Case, field...	1
	518300	Desk, field...	1
	529100	Goggles ...	1
	563450	Tableware...	1
	576310	Table...	2
	586684	Typewriter, non-portable, 15-inch carriage	1
	( )	Bookset, engineer group, FSN 7610-664-0437	1
	( )	Individual aid kit, FSN 6545-M-30-300	3
	( )	Reproduction set, black and white process for drawings and tracings in the field, FSN 3610-174-5269	1
02		Team KB, engineer advisory	

PAR	ITEM NUMBER	ITEM DESCRIPTION	QUANTITY
02		Team KB, engineer advisory (Continued)	
	222752	Compass...	5
	232940	Flashlight...	5
	248450	Level, Abney, graduated to 90° and 1.10 for grades	1
	285852	Tool kit, carpenter, engineer platoon	1
	401088	Bayonet...	5
	402248	Binoculars...	1
	429280	Pistol...	2
	435965	Rifle...	3
	457110	Trailer, cargo, ¼-ton, 2 wheel	1
	457190	Trailer, 3/4-ton...	1
	460080	Truck, 3/4-ton...	1
	461790	Truck, utility, ¼-ton, 4X4	1
	465380	Wristwatch...	5
	529100	Goggles...	1
	569151	Tool kit, automotive maintenance	1
	571000	Tool kit, pioneer, engineer squad...	1
	( )	Individual aid kit, FSN 6545-M-30-300	5

C. OBJECTIVE 3 - ADMINISTRATIVE SUPPORT

1. Project Funding

a. As part of the test program, special authorization was granted for each of the advisory teams to maintain an imprest fund account. This account was administered under the supervision of the US Army Support Group, Vietnam (USASGV). Advisory teams were authorized to use up to $1000 per month for labor hire, purchase of materials, equipment rental, and other construction costs. A procurement ceiling of $250 per item per project was in effect.

b. One team reported no imprest fund expenditures.[43] Most other advisory team chiefs felt restricted by the $1000 monthly limitation, and especially by the $250 limitation per item per project. The evaluation team took the liberty of combining one of these[44] under one project number for convenience in reporting. The other project, repairs to 2 adjacent one-way bridges, remains reported in two parts.[45]

c. The imprest funds served a useful purpose. If they had not been available, the success of the ECAD test program would have been in jeopardy. With the exception of the construction materials and services made available by special forces commanders and from other agencies, local procurement, using imprest funds, was the only source of materiel and services support for ECAD civic action projects. Imprest funds should not be considered the sole, nor necessarily the best, means of logistics support for ECAD operations. After determining the availability of supplies from US military, indigenous, and US State Department foreign aid program sources, a decision should be made as to whether to use an imprest fund or a contracting officer system for procurement within the ECAD organization.

2. Materiel, Labor, and Equipment Support from Other Than Imprest Funds.

a. In support of most ECAD projects requiring steel beams and cement, USOM was the source of supply.[46] The 8WF14 beams used on many projects were actually parts of obsolete French military bridging in the hands of the Vietnamese government, but USOM arranged for their use by ECADs. USOM provided cooking oil and bulgar wheat as payment in kind for labor on ECAD projects.[49] If more rigs had been available, many wells, needed by relocated citizens in many strategic hamlets, could have been drilled with ECAD assistance.[50] USOM's contribution to the success of the ECAD test program was substantial. On the other hand, the ECAD program assisted USOM.

b. Province engineers and public works officials supported the ECAD

43/ pp C-117 through 136. 44/ p C- 157. 45/ pp C-96 and 97. 46/ e.g., pp C-7, 10, 29, 66, and 86. 47/ e.g., p C-39. 48/ e.g., p C-91. 49/ pp C-[illegible] and 129. 50/ pp C-128 and 149.

effort with materiel and equipment, in accordance with a pattern established by the province chief. Although all province chiefs cooperated with advisory teams, some did so more enthusiastically than others. Scattered throughout the illustrated project summary - Annex C - can be found examples of equipment, materiel, and labor support from provincial resources. Heavy transportation support was common. Construction equipment support was provided in many instances. Very common, also, was the employment of public works and provincial military personnel on ECAD civic action projects at no cost to the US.

c. The Bailey bridge at TAN AN was provided from Vietnamese Army (ARVN) sources.[51] ARVN was also the source of U-type pickets[52] and other construction materials made available through coordination with provincial agencies and USOM.

d. District, village, and hamlet chiefs provided conscripted and volunteer labor. In some cases, materials were furnished from these "grass root" sources.[53] When unskilled labor was hired using imprest funds, locally elected village and hamlet chiefs acted as labor contractors.

e. Headquarters, USASFV, funded 3 major projects - one Vietnamese and 2 US military camps.[54] Special forces A and B detachment commanders made a few local purchases of materials from their own operating funds for ECAD projects supporting clear-and-hold and other special forces sponsored programs.[55] Conversely, materials for 2 storm boat docks and a POL dispensing rack for A detachments were purchased from ECAD imprest funds.[56] Special forces associated para-military strike force personnel were provided by their unit commanders on all ECAD projects in support of special forces programs. Strike force commanders also assisted in procuring free civilian labor for civic action type projects.

f. Only one ECAD equipment maintenance project required continuing repair part support during the test.[57] This project, in support of small generators and pumps, would have failed completely, if it had not been for the ingenuity, perseverance, and scrounging ability of the equipment maintenance supervisor assigned the mission. No organized program has been developed within USASFV for repair parts replacement for generators. Although A detachment communications sergeants, who normally take care of electric power sources, do attempt to perform first echelon maintenance at a satisfactory level, there is apparently no established system for back-up support. Generators run until they can run no longer. They are then salvaged and replaced. End items can be replaced more expeditiously than magnetos, distributors, and fuel pumps. The

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[51] p C-28. [52] pp C-6, 7. [53] e.g., p 140. [54] pp C-125, 173, and 177. [55] e.g., pp C-117, 130, and 150. [56] pp C-141, 142, and 146. [57] p C-123.

ECAD equipment maintenance supervisor on this project did try to install a maintenance system that would correct the situation in one corps area, but to no avail.

3. Administrative Support of Team Personnel

a. Personnel records and morning reports were maintained at home station while ECADs were on TDY. This created some problems when 2 men were evacuated through medical channels to CONUS and another was returned to Okinawa for ineffectiveness.

b. A base to support personnel and administrative requirements is in being in Vietnam. Much support provided is on an austere basis by CONUS standards, but is adequate.

4. Augmentation Equipment and Personnel

a. In Vietnam, ECADs were able to obtain adequate equipment and labor support to accomplish their mission, with rare exception. If the province chief wanted the project accomplished, he or USOM provided the means not available within the organic resources available to the ECADs.

b. Two Navy STAT teams, which consist of personnel cross-trained in most construction skills, and which are authorized a variety of types of heavy construction equipment and tool sets, were stationed in Vietnam concurrently with the ECADs under test.[58] These teams are capable of independent action, and for the most part, operated in this fashion on airfield construction and road projects in support of special forces programs. With organic equipment, they have a far greater capacity for construction work than advisory teams have. STAT teams have done an outstanding job in Vietnam, but the philosophy for their utilization differs greatly from that of ECAD operations. Advisory teams do not rely only on their own means of achievement, but exploit local resources to the maximum. They aim toward helping people in underdeveloped nations to help themselves. When an advisory team is unable to undertake a sophisticated project requiring modern construction equipment or skills, it is because the means are not locally available.

c. The advisory team can maintain its austere stature and still get many worthwhile civic action projects accomplished. The evaluation team has found a few small changes to the TOE that can make the ECAD more effective,[59] but cannot find fault with basic organizational, equipment, and operational concepts. No special augmentation personnel nor equipment are required.

5. Optimum Support Base

58/ p C-128. 59/ See foregoing Section IIIB.

a. ECADs have more opportunity to function effectively with a special action force, such as USASFV, than they do in support of a well organized MAAG.[60] Special forces detachments have funds to support civic action type projects, as well as paramilitary programs. MAAGs are committed to advising organized military forces, and have an organic advisory structure for engineer units and operations. If the underdeveloped nation agrees to implementing a civic action program using indigenous engineer troops, MAAG engineer advisory teams should be augmented to assist in the program. An ECAD is not necessarily the best solution for this type augmentation.

b. MAAG has its own and USASFV has a separate logistical support structure. Neither of these contributed substantially to ECAD civic action projects. USASGV administered imprest funds, and USOM and province chiefs furnished materiel and other types of logistics support to the ECAD program, as required.

c. The optimum support base for ECAD would allocate funds for procurement of materials, labor, equipment, and services that are not available from indigenous or ECAD resources, or it would provide these basic construction requirements in kind. In most potential objective areas, allocation of funds would be more economical, when considering the advantages of building modest structures from locally available materials with common hand tools.

6. Findings - Objective 3 - Administrative Support

a. A typical special action force has better inherent capabilities to provide a support base for ECAD operations than does a MAAG, although advisory teams can function equally as well in either environment.

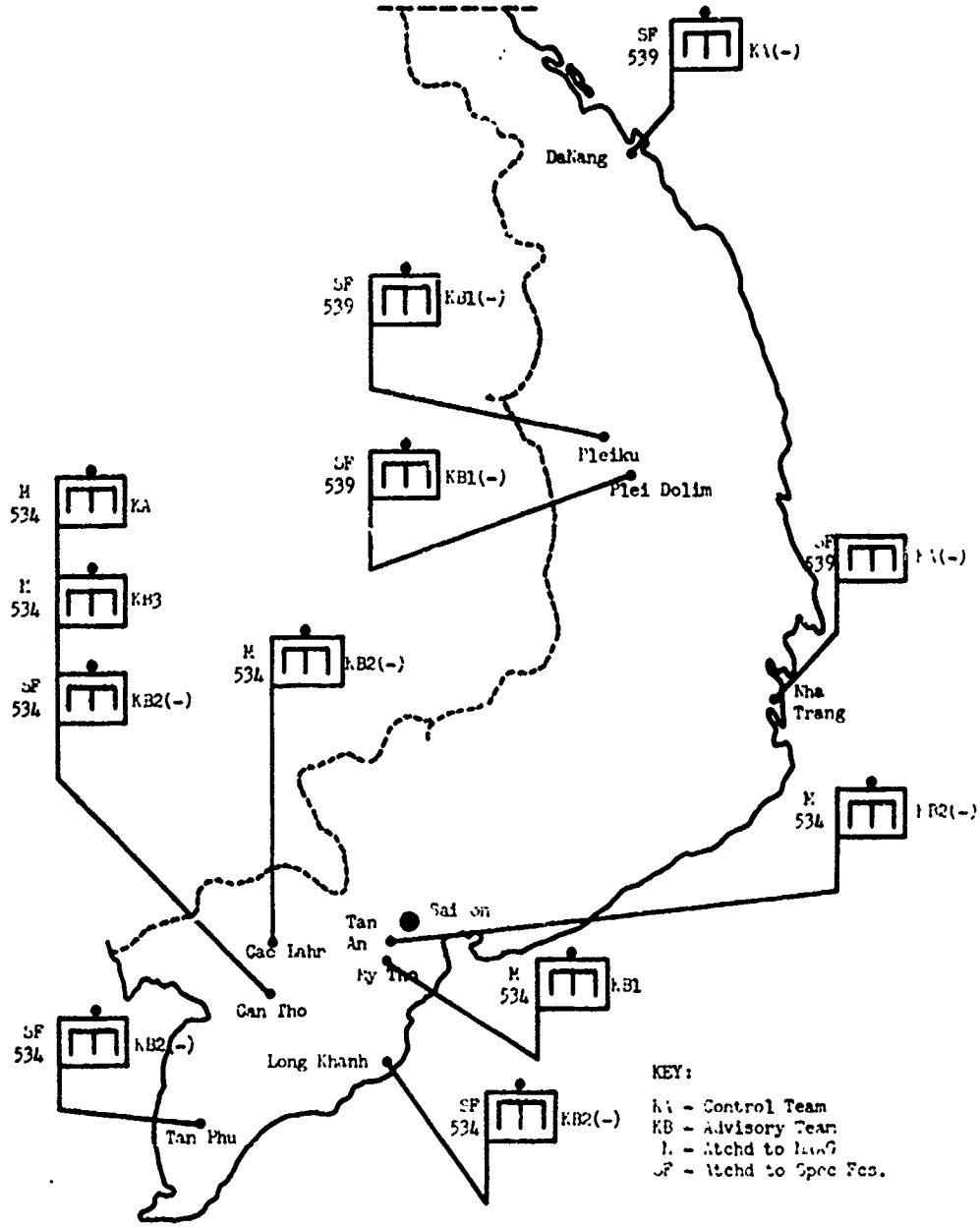
b. ECADs need imprest fund or contracting officer authority to support civic action projects. Limitations on expenditure will be governed by the amount of materiel, labor, and equipment assistance that can be obtained from local indigenous and US military and civilian resources.

c. No augmentation equipment nor personnel are required to back up ECAD operations. Organic equipment is basicly adequate.

60/ This is not meant to imply that ECADs attached to USASFV performed more effectively than those attached to the MAAG Advisor, IV Corps.

ANNEX A

TEAM LOCATION AT
TERMINATION OF THE
ECAD TEST



ANNEX B

REFERENCES

1. Letter, to Chief of Staff, United States Army, from Major General Rosson, dated 30 January 1963, subject: "Special Warfare Field Visit to Vietnam and Okinawa."

2. Letter, ACTIV-SW, dated 9 April 1963, subject: "Test Plan-Engineer Control and Advisory Detachments."

3. TOE 5-500C, with Change 13, Department of the Army, dated 25 Feb 1963, subject: "Engineer Service Organization."

4. Letter, AGAM-P (M) (31 October 1962) as amended, dated 6 November 1962, subject: "Army Troop Test Program in Vietnam."

5. Letter, MACV TOE 3960, Ser 022, dated 7 January 1963, subject: "Summary of Test Plan for Engineer Control and Advisory Detachments."

6. Message 3900, CINCPAC Ser 093, dated 2 February 1963, subject: "Summary of Test Plan for Engineer Construction Advisory Detachments."

7. Letter SDEG-DO, dated 30 August 1963, United States Army Combat Developments Command, subject: "Employment of Engineer Control and Advisory Detachments (ECAD)."

8. Report Number 15, 27 August 1963, Combat Development and Test Center Vietnam, subject: "Operational Test and Evaluation of Individual Aid Kit for Special Forces."

9. Letter, ACTIV-SW, 26 August 1963, Engineer Control and Advisory Detachments (ECADs) - Interim Test Report.

ARMY CONCEPT TEAM IN VIETNAM
APO 143, San Francisco, California

ANNEX C

ENGINEER CONTROL AND ADVISORY DETACHMENTS

Final Test Report

15 October 1963

ANNEX C

CONTENTS

ILLUSTRATED PROJECT SUMMARIES: (Cont'd)

ILLUSTRATED PROJECT SUMMARIES: (Cont'd)

ILLUSTRATED PROJECT SUMMARIES: (Cont'd)

ILLUSTRATED PROJECT SUMMARIES: (Cont'd)

INTRODUCTION

This is an illustrated summary of engineer control and advisory detachment (ECAD) projects that were accomplished during a Department of the Army test administered by the U.S. Army Concept Team in Vietnam. The 120-day test, which commenced 15 May 1963, was conducted in support of actual counter insurgency operations.

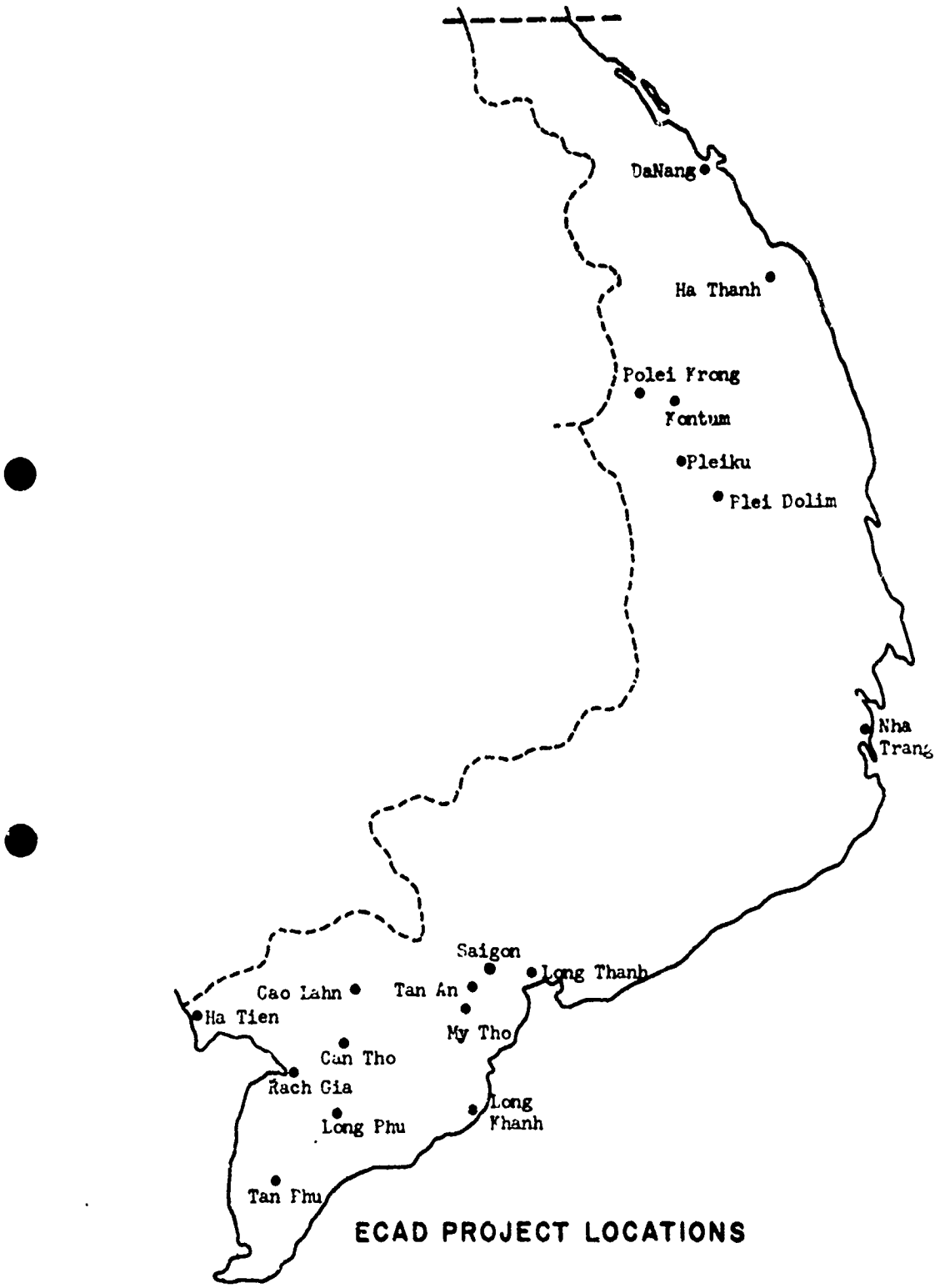
An ECAD consists of a 5-man control team and a number of 5-man advisory teams. The control teams act as engineer staffs for special action force control elements engaged in insurgency or counterinsurgency operations. Advisory teams advise indigenous military and civilian authorities in the field of civic action engineering projects.

In Vietnam, one control team and three advisory teams supported MAAG operations; one control team and two advisory teams supported special forces operations. MAAG teams were oriented almost entirely toward supervision of indigenous civilian personnel on modest welfare construction projects. This can be likened to President Kennedy's "People-to-People Program." Special Forces' engineer advisory teams functioned in the support of military facilities, as well as on civic action projects.

This illustrated summary does not contain information on all security, material delivery, and other problems encountered by each team on each project. These are alluded to in a few representative project summaries accompanying illustrations.

Public officials and military authorities have been enthusiastic in praising the accomplishments of the ECADs tested. The immediate beneficial impact on the economy and welfare of many remotely located hamlets has been significant. The ECAD effort has also had a "pump priming" effect. Training unskilled civilian and military personnel in sound engineering practices and procedures has demonstrated the possibility of developing a potential labor force capable of producing worthwhile, unsophisticated structures in the future, with little or no advice. The U.S. Government has received more return on its investment in ECAD operations, than it has from many aid programs. A review of cost figures in project summaries reveals that the cost of most completed welfare projects has been suprisingly low.

The concept of a small engineer advisory and supervisory team in support of civic action has been effectively demonstrated in Vietnam. There is no reason ECADs cannot work equally as well in other underdeveloped countries of the world.



ECAD PROJECT LOCATIONS

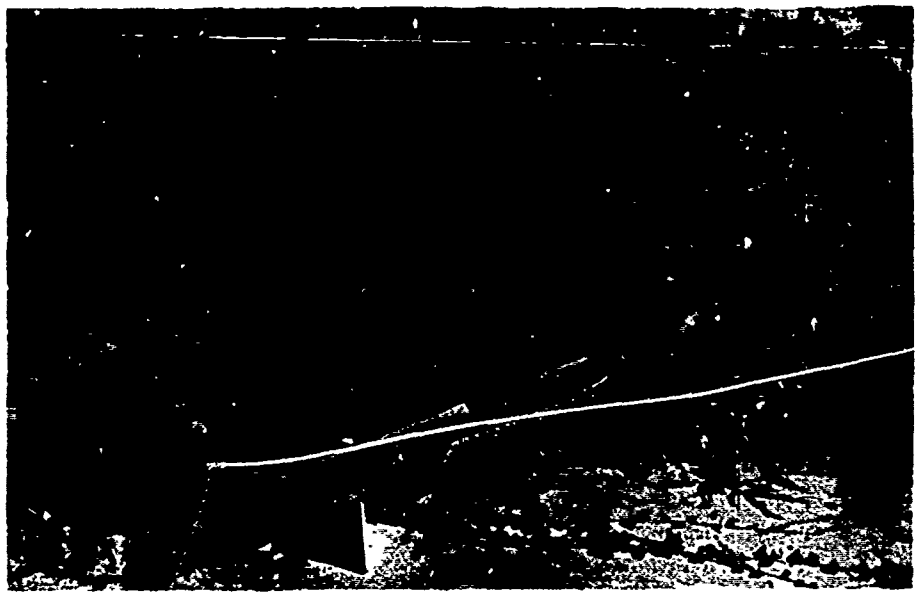
MAAG 1-1. Completed footbride at CAI BE village, SUNG HIEU district, 25 miles west of MY THO. Bridge is 40 meters long and 2 meters wide, and was constructed under the supervision of an advisory team as its first project under classical insurgent circumstances. The entire area is under VC control, and the Vietnamese flag does not fly on the schoolyard flagpole. District plans envision an operation in the near future, that will establish CAI BE as a combat village. The bridge was considered essential for the rapid movement of troops among the strategic hamlets and will make up the village. During the two day construction period, security was provided by a company of ARVN Rangers. Abutments and steel piles of an original bridge, sited at a higher level, can be seen in the photo. Original bridge was destroyed and later replaced by a footbridge, of which several concrete bents remain. The advisory team used all existing substructures, insofar as they lent themselves to supporting the new footbridge. This is an excellent example of engineering expediency in the field.

Cost data:

Materials	$198.39
Labor	23.53
Total	$221.92

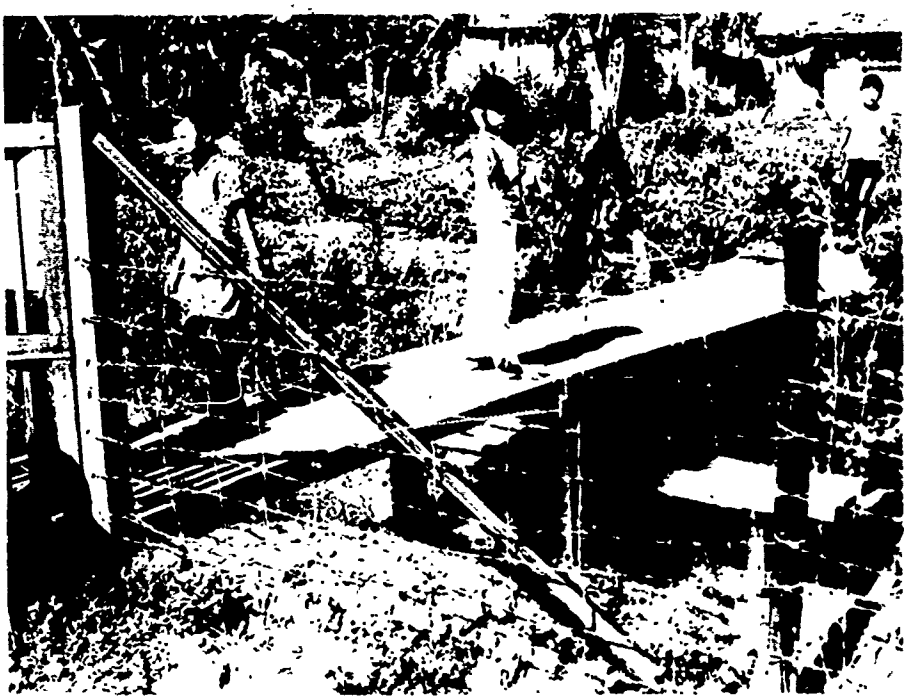
MAAG 1-1. Armored security screening force, which preceeded main body of patrol to Mekong River, enroute to CAI BE village. Accomplishment of this project was as follows: The security force cleared the route leading west from MY THO to the village of CAI THIA on the Mekong River, a distance of about 25 miles. The main body comprising a company of ARVN Rangers and the advisory teams, with construction materials, followed the security elemen CAI THIA. Here the troops and advisory team were loaded on river bo · the final run to CAI BE village.

MAAG 1-1. One of the river boats (LCVPs) on Mekong River used to made final approach to CAI BE village. Each boat carried one platoon of ARVN Rangers and was armed with crew-served weapons. Security troops and advisory team were loaded on river boats at CAI THIA, where they proceeded east on the Mekong River about 10 miles to the canal leading north about 2 miles to CAI BE. A platoon of rangers was put ashore at the mouth of the canal to screen and clear the approach of the river boats up the canal to CAI BE. The return trip was in reverse order.



Pig feeding station at VINH BINH village approximately 20 km north of MY THO. Station consists of inclosure 18X52 meters made of standard steel 8 foot U-pickets, driven 3 feet into the ground, on 8-foot centers. Fencing is military type barbed wire strung horizontally on 6-inch centers, vertically on 8-inch centers, and tied at all intersections. Troughs are made of 1-inch lumber and are spaced along one end of the enclosure. Pickets and wire were furnished by USOM, and lumber was purchased locally. The hamlet provided civilian labor. The purpose of the project was to gather and feed all village pigs with the end result of improving economy and increasing production. This project, however, is not being used, because hog owners were reluctant to transfer the responsibility for the care of their hogs to others, and breeding could not be controlled nor accounted for.

Cost data:		
	Material	$153.00
	Labor	10.00
	Total	$163.00



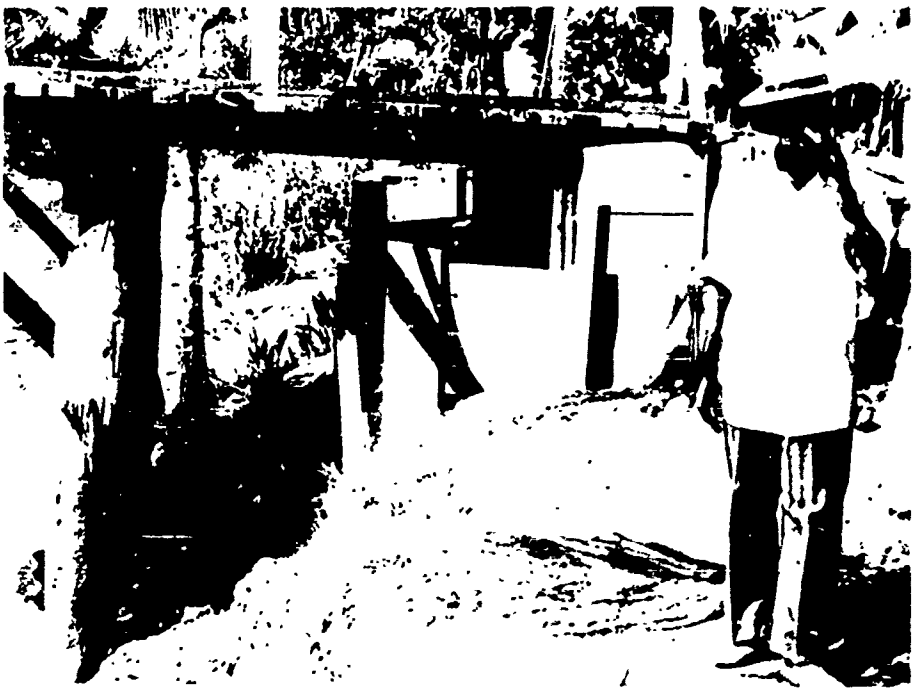
MAAG 1-3. Pig feeding station at TAN HOI DONG village, BEN TRANH district, 18km north of MY THO. Station consists of enclosure 18X52 meters. Materials utilized are steel U-pickets with barbed wire woven by hand. Troughs (not shown) are of 1-inch lumber. Photo depicts section of fence, gate and small footbridge over stream providing access to station. Purpose of project was to improve village sanitation and to increase production. Fencing materials were provided by USOM. Lumber was funded by ECAD. This enclosure was not used for its intended purpose. (See MAAG 1-2.)

Cost data:		
	Materials	$21.73
	Labor	21.98
	Total	$43.71

MAAG 1-4. End view of a completed bridge located in TAN HOA village, BEN TRANH district, 21km northwest of MY THO. The bridge is on a road between two fortified villages, and provides access to a farm-to-market road. Bridge is class 12, 12.5 meters in length, and 3.5 meters wide, with steel 8 WF 14 beam stringers and timber decking. Timber piles were driven to refusal in stream bed. Abutments are reinforced concrete, poured over rows of 4X6 timber piles. The 8 WF 14 beams were furnished by USOM, and all other materials were procured locally. Civilian labor was provided by the hamlet. Captain Jenkins, advisory team commander is shown inspecting the finished project.

Cost data:		
	Materials	$186.60
	Labor	30.80
	Total	$217.40

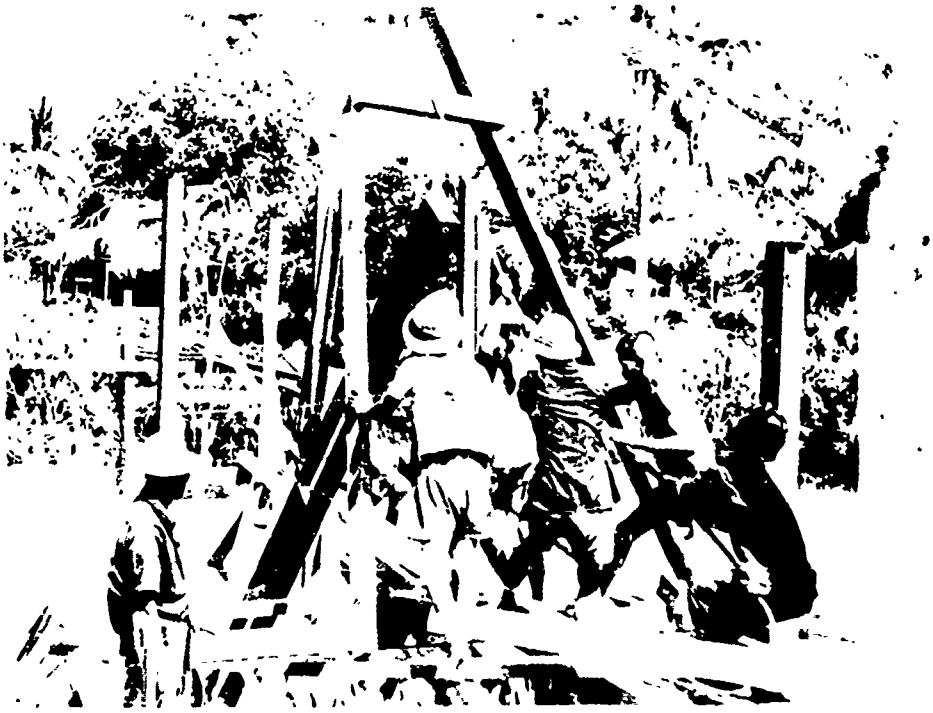
MAAG 1-4. Side view of bridge and abutment, before removal of concrete forms. Details of construction indicate this project was well supervised by advisory team personnel. The hamlet chief shown assumed duties the day this picture was taken. The former chief was killed the previous night during a VC raid on his hamlet.



MAAG 1-5. Bridge at PHU MY village, BEN TRANH district, 25km northwest of MY THO. Completed bridge is 25 meters long, 2.7 meters wide, rated class 12. Project included welded steel 8 WF 14 piles, stringers of the same material, with timber decking, and side rails. Footers were concrete poured on 4 to 6-inch diameter log posts. Twenty three WF beams were furnished by USOM. All other materials were purchased locally from ECAD funds. Labor came from the hamlet. Two VC agents worked on this project for a week before being exposed at the pay table. Note security guard at the right hand end of the bridge. Purpose of the project is to provide access among hamlets of the village, which especially important, since they share a common school, assembly hall, market, etc. Advisory team personnel lived in the village and received intermittent small arms fire during construction of this and other nearby projects. One hamlet chief asked the evaluator, "Why are Americans willing to risk their lives on these construction projects in Vietnam?"

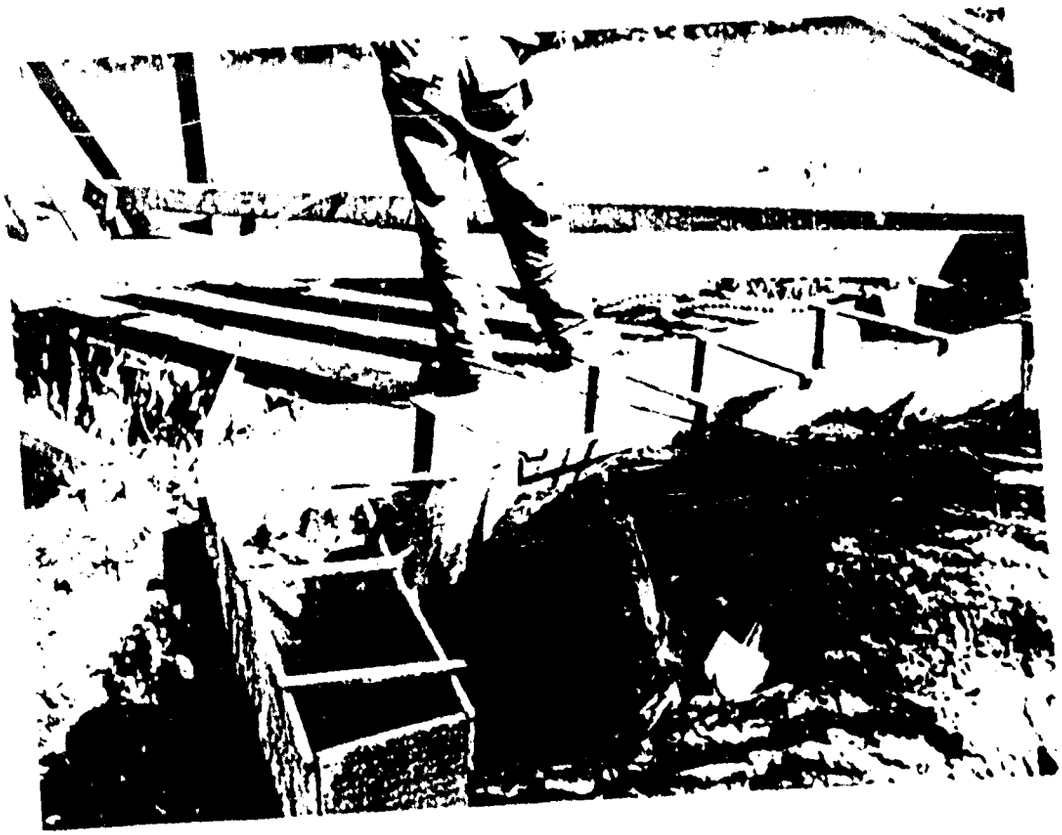
Cost data:

Materials	$567.00
Equipment	39.85
Labor	127.00
Total	$733.85



MAAG 1-5. Hamlet civilian labor crew setting a steel pile, which will be driven to refusal, approximately 8 feet into stream bed. Note block rigging materials from pioneer equipment set being utilized.

MAAG 1-5. Hand mixing concrete for end footers. At left is measure box for quality control. Mix ratio 1:2:3.



MAAG 1-5. End footing form with first 4 inches of concrete already poured. Steel reinforcing materials are being added and will be followed by another 4 inches of concrete. Footers were poured over parallel rows of posts driven into the ground.

MAAG 1-6. Footbridge at village in LONG DINH district, approximately 30km northwest of MY THO. Bridge is 25 meters long 1.80 wide, 5 spans of 5 meters each. Its purpose is to provide access among several strategic hamlets. Project abandoned because of intensive VC activity upon delivery of materials to site. No photographs available.

Cost data:		
	Materials	$109.94
	Total	$109.94

MAAG 1-7. Footbridge in LONG DINH district, approximately 30km northwest of MY THO. Bridge is 24 meters long, 1.80 meters wide. Its purpose is to provide access among several strategic hamlets. Project abandoned because of heavy VC activity after delivery of materials to job site. District was unable to provide necessary security to enable construction. No photographs available.

Cost data:		
	Materials	$114.90
	Total	$114.90

MAAG 1-8. Footbridge at PHU MY village, BEN TRANH district 25km northwes' of MY THO. Completed bridge is 12 meters long, 2 meters wide. Timber p' 's were driven to refusal in sand. Stringers and decking are 2X10 mahogany All material was procured from dealer in Saigon, who made delivery by m transport. At most other advisory team locations in the vicinity of MY ' 40 materials were delivered by intra-Delta canal barges. Purpose: To provide bridge on perimeter road connecting hamlets. Road is used primarily for security patrol and rapid deployment of local militia upon VC attack.

Cost data:		
	Materials	$149.00
	Labor	26.00
	Total	$175.00

MAAG 1-9. Tie-downs for 12 aircraft installed at TAN HEIP airstrip, BEN TRAIH district. Purpose of project is to secure aircraft of both US and ARVN forces. Materials and labor furnished by public works engineer, MY THO.

Cost data: None

MAAG 1-9. Close-up of tie-down ring. Tie-downs are 3/4-inch steel rod, 3 feet long with two 18-inch cross arms welded to buried end. The advisory team did the fabrication and installation of the tie-downs with stock furnished by public works engineer.

MAAG 1-10. Footbridge in hamlet near MY THO in LONG DINH district. Bridge is 2 meters wide and 6 meters long, single span construction over existing timber palm log piles. Stringers are 2X8 and decking is 2X6 material. Caps are 4X8 and longitudinal bracing is 2X6 lumber. Soldier on left is interpreter assigned to advisory team by Province Chief. The two men to right of interpreter are civil guards assigned to provide site security. Volunteer laborers constructed this bridge under supervision of advisory team personnel. The purpose of project is to provide access between hamlets and to facilitate movement of reserve forces, in event of a VC attack.

Cost data:		
	Material	$42.40
	Labor	None
	Total	$42.40

MAAG 1-10. End view of completed footbridge near MY THO, in LONG DINH district. Note barbed wire gate, which is closed at night to complete barbed wire security fence enclosing hamlet.

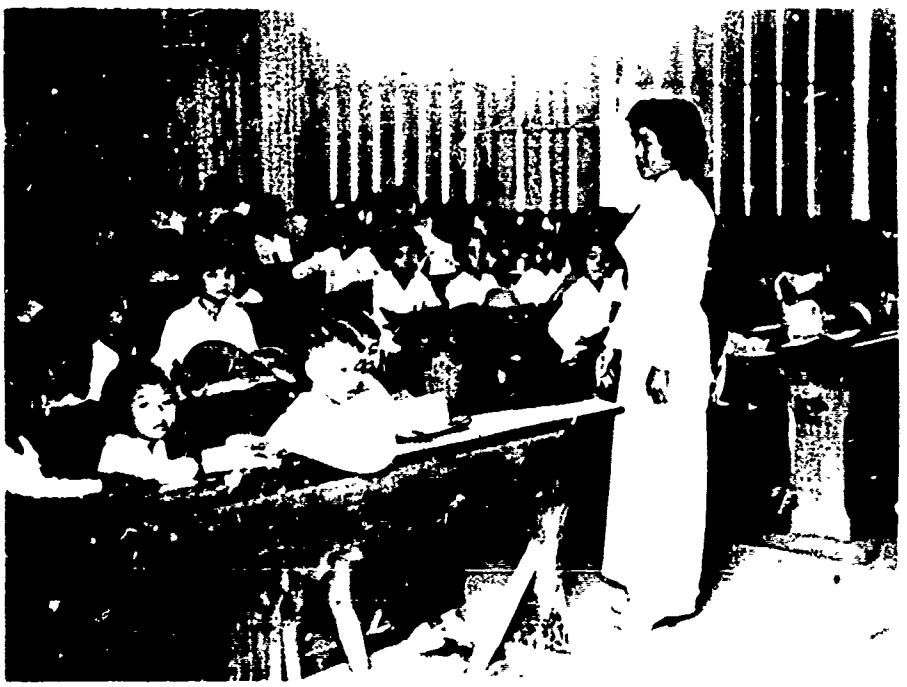
MAAG 1-11. Schoolroom floors at MY THO, DINH TUONG Province. Captain Jenkins, advisory team commander and Sergeant Howard, construction supervisor observe project underway. Concrete work consisted of pouring floors in a 9 room school, each room 27X24 feet; pouring a sidewalk running entire length of school, 260X4 feet; and pouring a porch slab 20X24 feet. All concrete was 4 inches thick not reinforced. Total concrete poured was 91 cubic yards. Cement and a truck to haul aggregate were furnished by province engineer. Other materials, e.g., sand, gravel forms, and labor were paid for by the advisory team. Mixer and water trailer were borrowed from an ARVN engineer unit. Purpose of project: to provide concrete floors and access sidewalks for local elementary school where only dirt floors existed previously. Eighteen classes of 60 students each receive education at this school, or a total of over 1080 students and teachers benefit by project;

Cost data:		
	Material	$567.00
	Labor	$200.00
	Total	$767.00

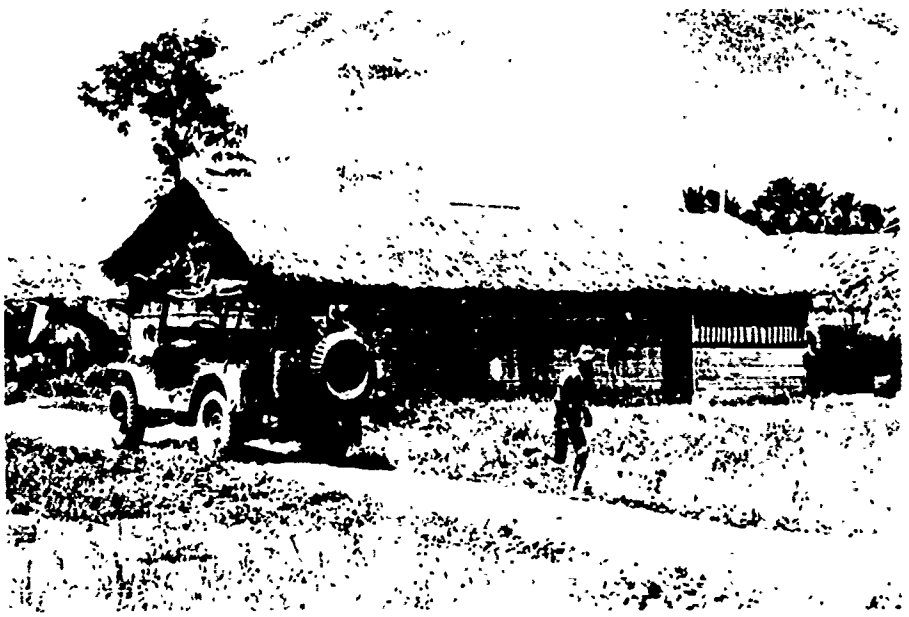
MAAG 1-11. Before and after photos of one of the 9 classrooms. In upper photo Sergeant Howard and Vietnamese interpreter are shown standing on original dirt floor. Bottom photo clearly illustrates clean, dust free classroom with students at their desks.

MAAG 1-11. To the left, EUAD construction Sergeant Howard supervising concrete finishing. Below civilian laborer charging mixer. Note wooden boxes used to insure uniform mix. Sergeant Bruns, engineer maintenance supervisor, performed initial adjustments and operated the 16S mixer. He is seen in left rear.

MAAG 1-11. Sergeant Bruns views completed sidewalk, which runs the full length of school.



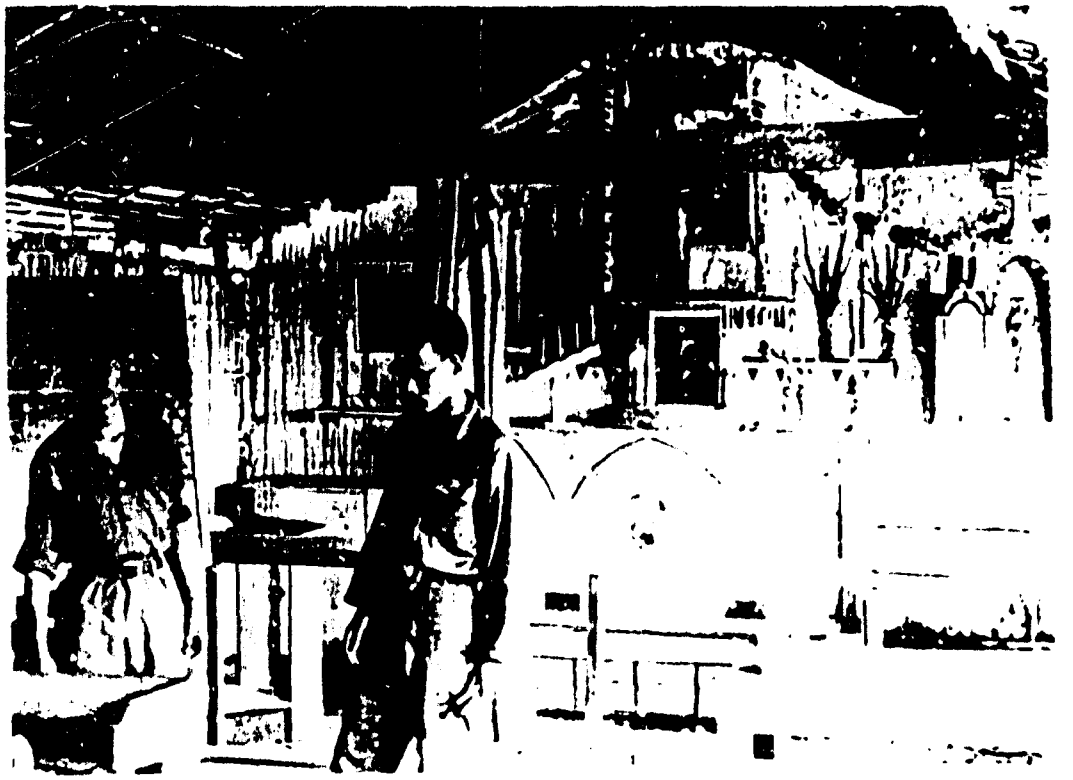
MAAG 1-11. Class in session. Female teachers and students were moved into this school upon completion of concrete floors. Before this, only male teachers and students were assigned to this school. Captain Jenkins' advisory team produced quality construction on all its projects, because supervision on the job was constant, and knowledgeable personnel demanded and got good work out of unskilled laborers.



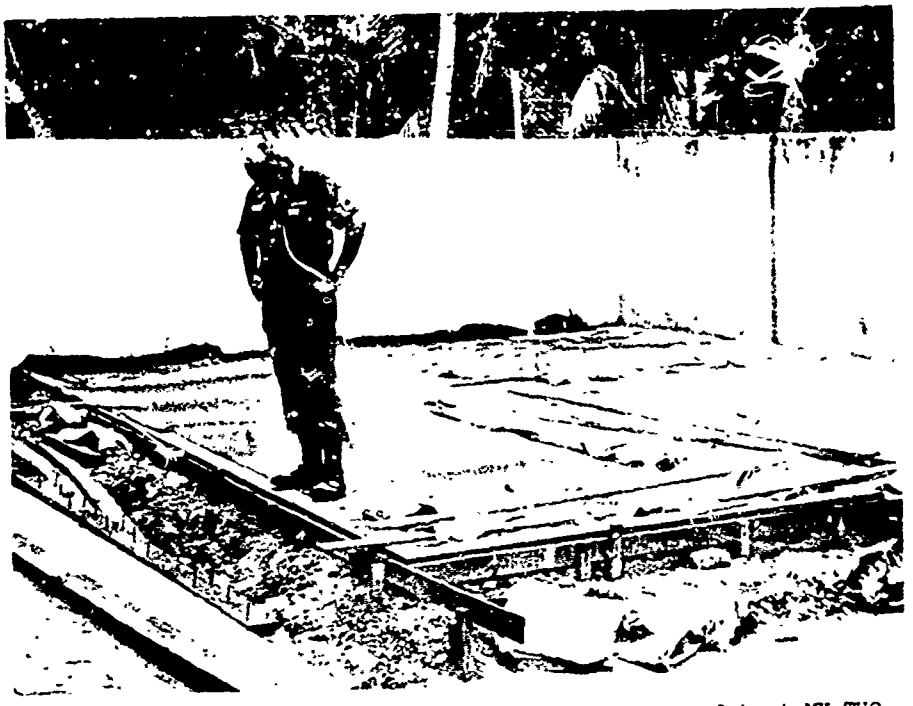
MAAG 1-12. Church school at MY THO. A 20X40-foot concrete floor slab was to have been poured in this building by the advisory team to replace the existing dirt floor. Time did not permit the completion of this project. Project, with cement and form lumber, has been returned to province engineer, who will complete the task. Students will enjoy a clean, dust-free, sanitary classroom. Eventual plans include razing of present structure and replacing it with a new permanent building over the new slab. Recipient of project will be church school.

Cost data:

Material	$50.00
Labor	None
Total	$50.00

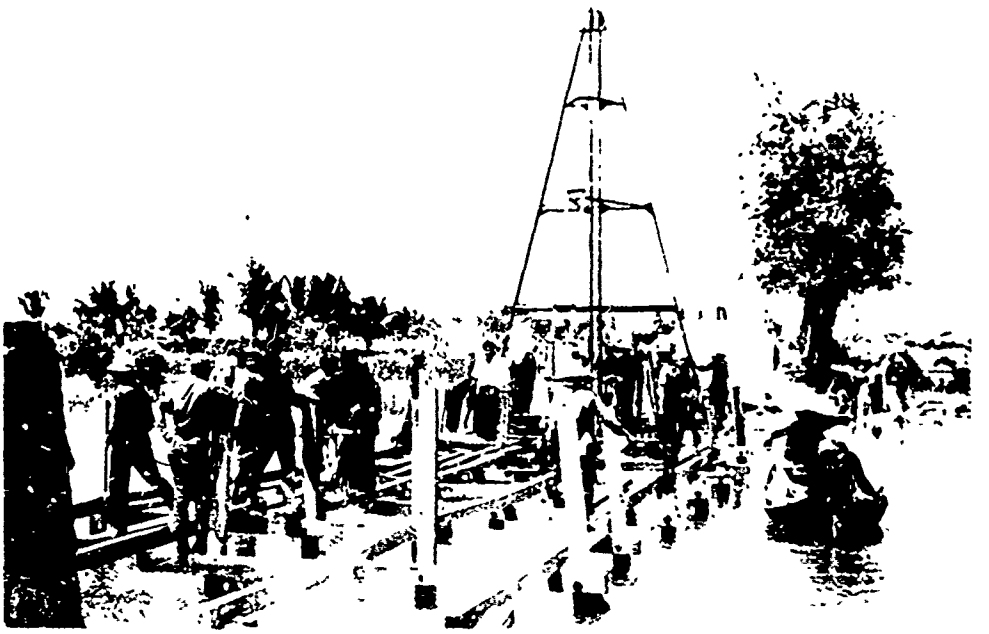


MAAG 1-12. Church school at MY THO, DINH TUONG Province. Caretaker of church school on left and advisory team interpreter are shown inside classroom, which presently has dirt floor.



MAAG 1-13. Sergeant Bruns views a 20X40-foot concrete slab at MY THO, DINH TCUNG Province. Slab was poured by advisory detachment in former seminary area now occupied by the 7th Division MAAG. A guardhouse will be erected over the slab for SDC personnel. All labor and materials were paid for from MAAG detachment operating funds. The cement mixer used on project MAAG 1-11 was diverted temporarily for this project.

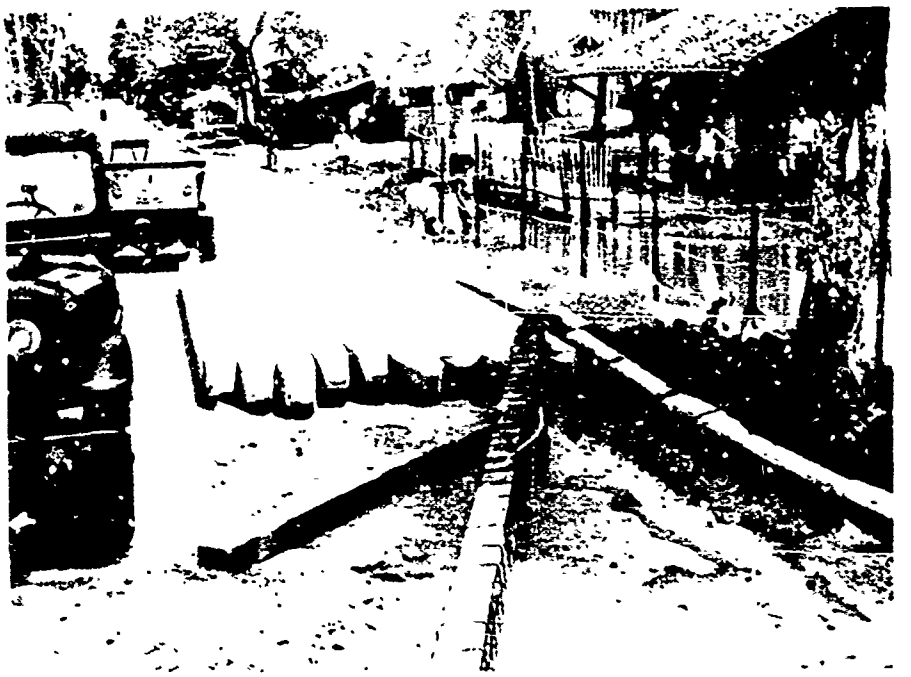
Cost data: None.



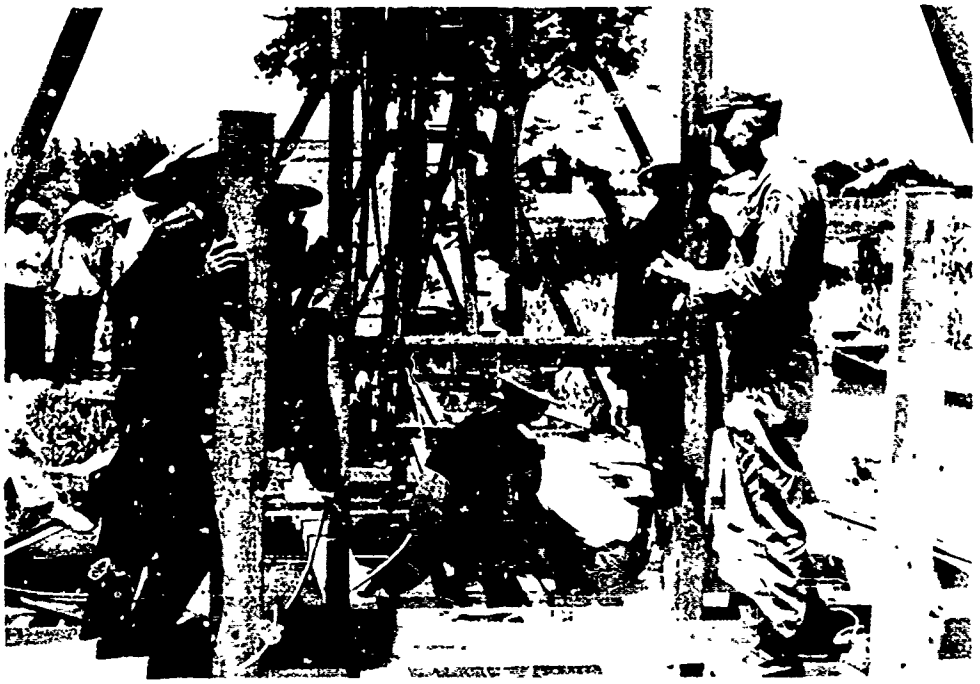
MAAG 2-1. Bailey bridge in hamlet near TAN AN. Bridge is 59.4 meters long, 3.5 meters wide, class 18. Photo shows work on substructure. Steel tripod was constructed over temporary work platform for purpose of driving steel piles for center trestle bent. Abutments of former bridge were used in this project. This bridge will open an alternate MSR between TAN AN and MY THO. Advisory team designed bridge and supervised construction. The province engineer provided the labor. The advisory team departed Vietnam before the bailey bridge could be launched. Launching will be handled by the province engineer, supported by an ARVN engineer unit.

Cost data:

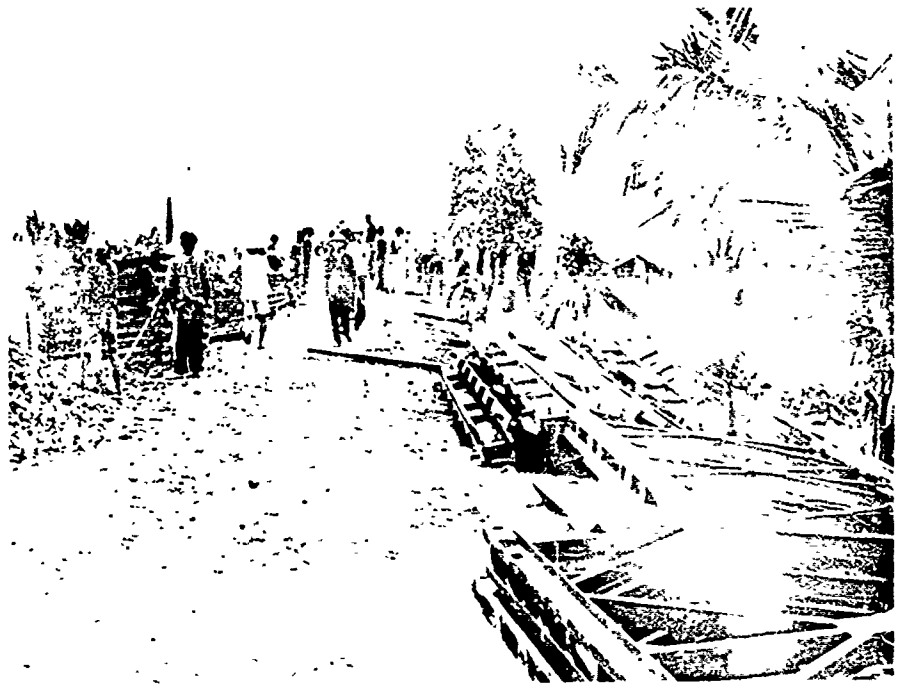
Material	$436.00
Labor	None
Total	$436.00



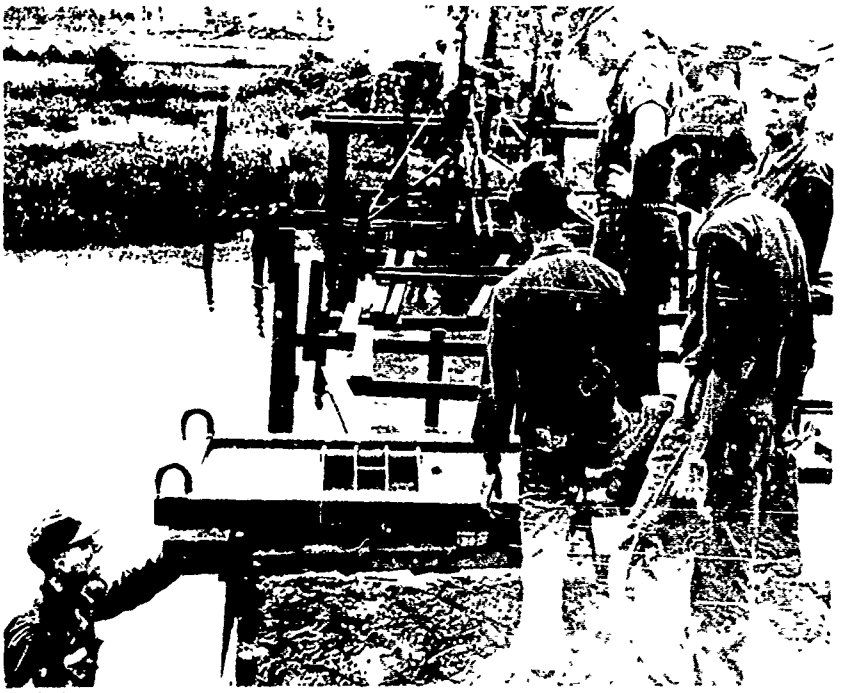
MAAG 2-1. Steel WF beams in foreground wrapped with 3/8-inch reinforcing rod, tack welded. Beams were encased in concrete, as shown in the background, for use as piles in brackish tidal water. When pile driving operations commenced, another length of uncoated beam had to be welded to the top, for these piles ended up in the silt below the stream bed. WF beams were furnished by USOM.



MAAG 2-1. Sergeant Mintz supervises local civil works personnel in erection of steel tripod on temporary platform at bailey bridge site.



MAAG 2-1. Bailey bridge components at bridge site. The province civil works office handled transportation of components and bridge erection set from an ARVN engineer depot in Saigon.



MAAG 2-1. Sergeant Mintz, lower left, adjusts position of base plate for rocking rollers. Captain Komer, behind civil guard personnel, observes. Other men are members of civil guard squad trained by this advisory team.

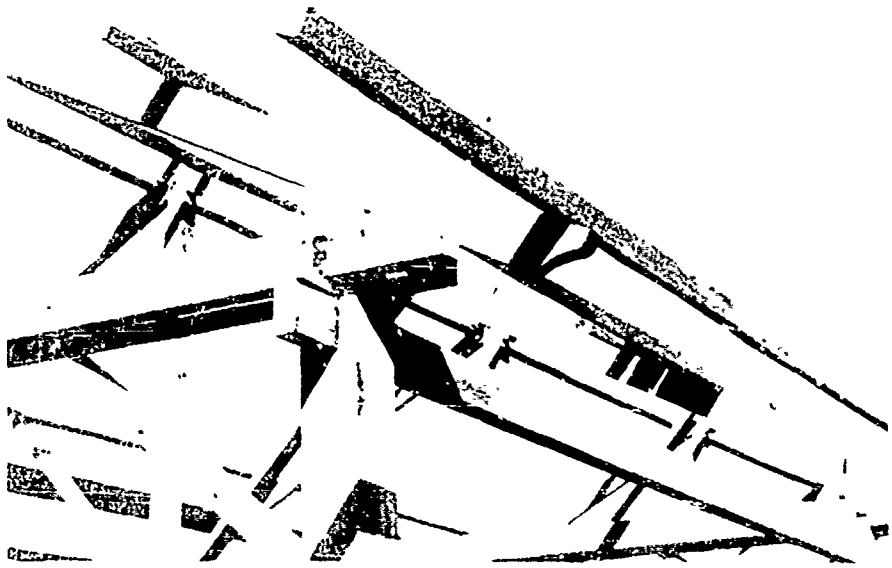
MAAG 2-2. Road surface stabilization about 10 to 15 miles south of TAN AN. Improvement of bridge approaches at 3 different sites on section of road called for stabilization with soil-cement. This was the first known use of soil-cement in Vietnam, and was successful on 2 of the 3 bridges. Photographs could not be taken without a large security force. VC gas gained control of the area since the project was completed. USOM furnished cement, and labor force was made up of civilian volunteers.

Cost data: None

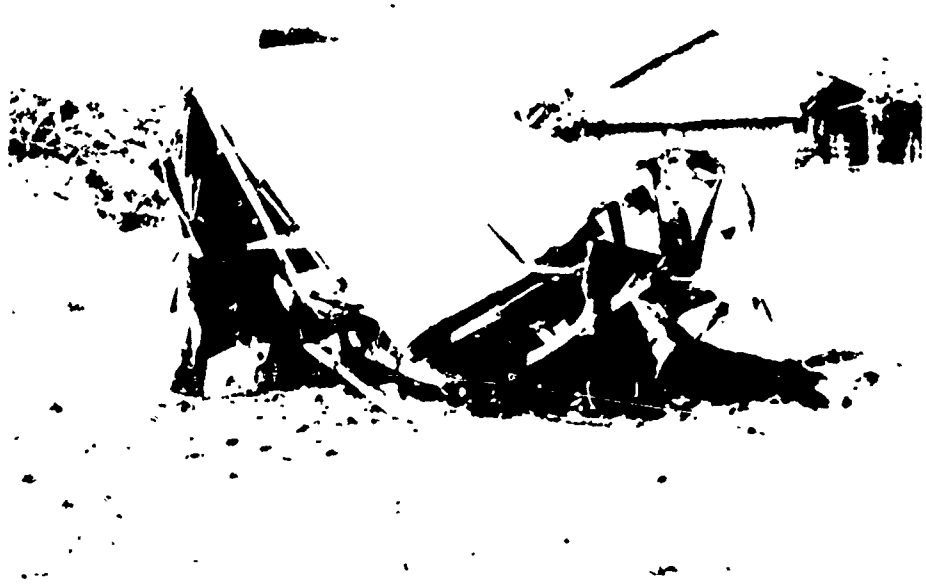
MAAG 2-2. School consisting of 4 classrooms at BIN TUC hamlet, near TAN AN. The province engineer designed the building. It has a 20X50-meter concrete floor, metal corrugated roofing and wooden siding. Villagers are in the process of painting the school a colorful red, white, and blue. Villagers donated all the labor for this project. This facility is now used by 250 children, who formerly attended school in the market place.

Cost data: A total of $457.00 for materials only.

MAAG 2-3. School house in framing stage.

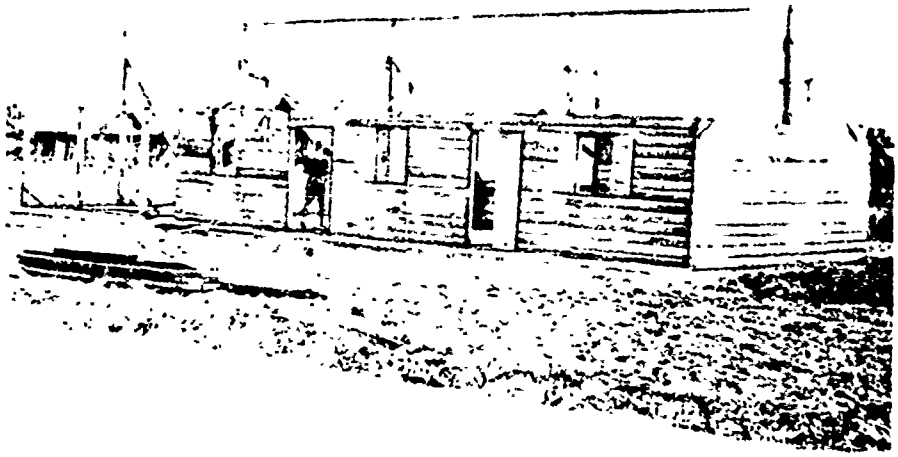


MAAG 2-3, Framing detail. Note corner post and method for joining structural members.



MAAG 2-3. Bus carrying security force to school construction site demolished by land mine. An electrically detonated charge, estimated at 80 pounds, killed 3 civil guards and the driver and seriously injured the remaining 26 soldiers, within 150 yards of the school construction site at BIN DUC. The bus load of soldiers was on its way to provide security for ECAD personnel and volunteer laborers from the village. The bus was split in half. The front end was thrown 50 feet, and the engine was tossed 100 feet over a house. Villagers residing nearby admitted prior knowledge of the mine, but did not report it to Vietnamese authorities for fear of VC reprisals. The province commander, Major Xinh, is seriously concerned about his inability to provide adequate security for hamlets in his province. Unprotected personnel are easily intimidated by the VC.

MAAG 2-3. Major Nguyen Ngoc Xinh, Chief of LONG AN province, visiting with school children in this newly completed school. Major Xinh, recently appointed Province Chief, has consistently given the ECAD effort his enthusiastic support.



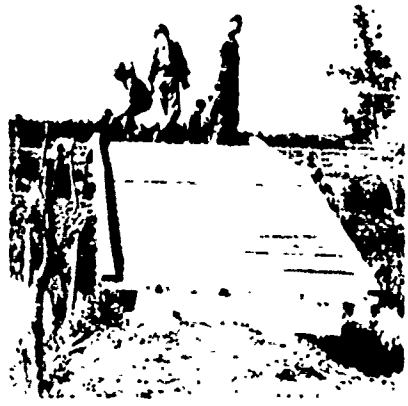
MAAG 2-4. School at XOM CONG hamlet, 8 miles north of TAN AN, in the framing stage. Design was by province engineer office. Floor is 20 by 7 meters with 4 inches of concrete. Due to an error in layout, one end of the floor slab was 9 inches longer than the other. The error was not discovered until precut members would not fit the frame. Later, several lengths of lumber were stolen from the site. These factors caused considerable delays, and the advisory team departed Vietnam before construction could be completed. The province engineer will complete the project, which will permit an additional 300 hamlet children to attend school. USOM provided the cement and issued rations of bulgar wheat and cooking oil to laborers for a day's work. The civil guard squad, trained by the advisory team, also participated in this project. The structure is located in the middle of a rice paddy. Over 200 laborers worked at one time on prepration of the 30X90-foot fill, on which the building rests. As sumps were dug in the paddy, chunks of mud were passed by hand in "fire brigade" fashion to the fill area. Over 100 cubic yards of earth were moved in this fashion.

Cost data: A total of $500.00 for materials only.

Sergeant Mintz supervising 200 laborers in constructing fill. Hamlet can be seen in background.

MAAG 2-4. Hamlet volunteers form in lines "fire brigade" style handling chunks of mud along from sumps to fill area.

MAAG 2-4. Sergeant Mintz directs the mixing of concrete (above) and placement of concrete (below). Note women engaged in heavy construction work.

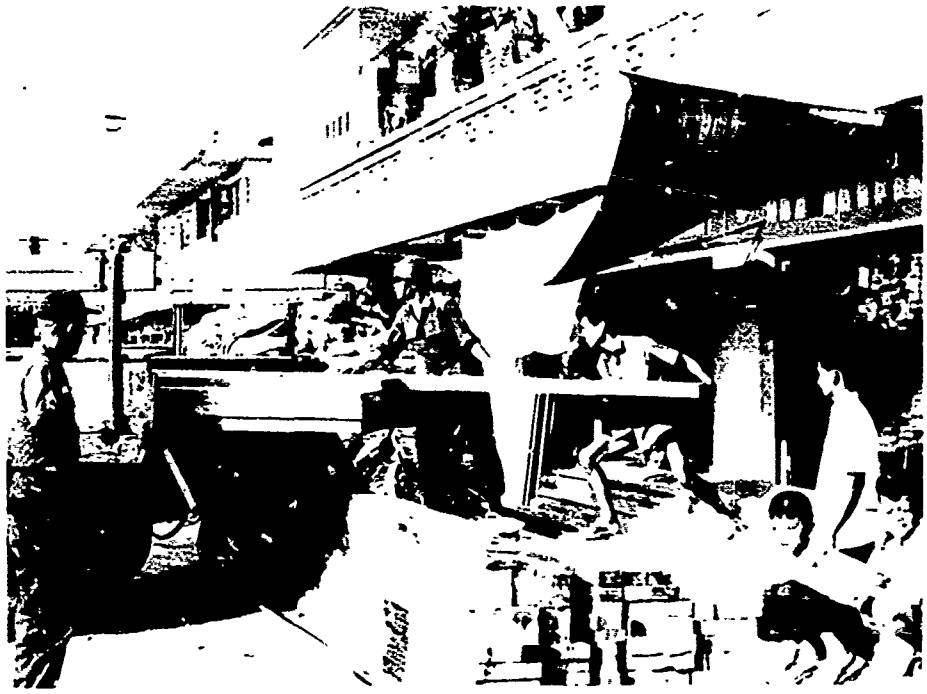


MAAG 2-5. Timber trestle bridge, 19.8 meters long, 2.1 meters roadway, class 4, at BINH QUAN village near TAN AN. Advisory team failed to provide for adquate abutment footers, permitting the bridge to twist at both ends. The civil guard squad, trained by this ECAD team, did most of the work. Prcject provides hamlet with access to vehicular farm-to-market road.

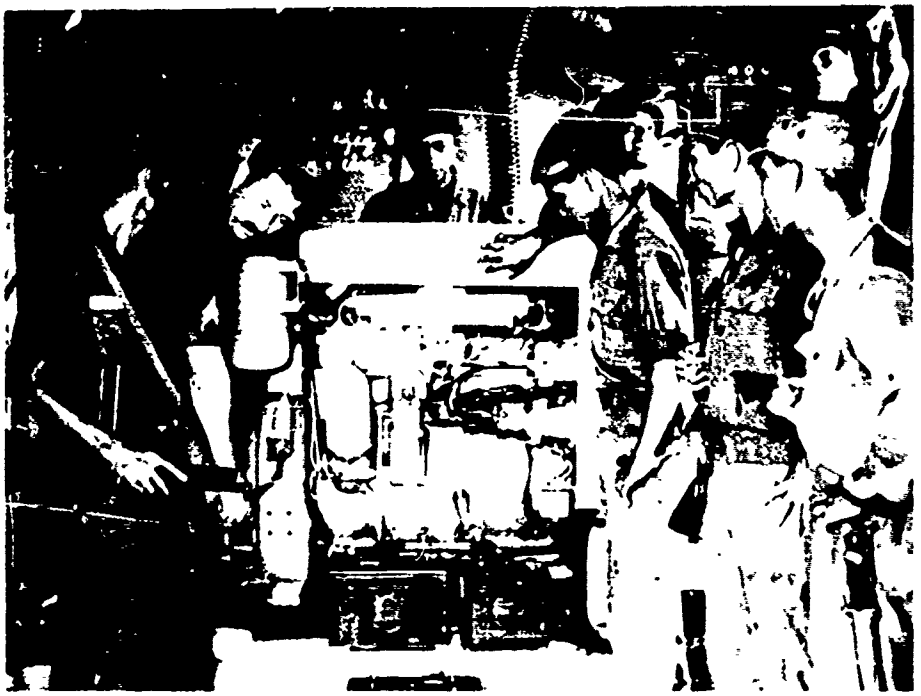
Cost data:

Material	$378.80
Labor	None
Total	$378.80

MAAG 2-5. Bridge under construction. As work progressed on this project, VC activity increased in the immediate area. Local homes were burned, trenches were cut across roads, and several inhabitants received threats. Bridge approaches and abutments were mined on two known occasions. Vietnamese authorities countered with increased security for the site, and would not permit the ECAD team to get on the job until the access road and the immediate area had been cleared. Three civil guards providing security and engaged in clearing operations were killed during the period of construction. Security requirements reduced supervision time to as little as one half hour per day. It is difficult to maintain the highest quality of construction under these circumstances.



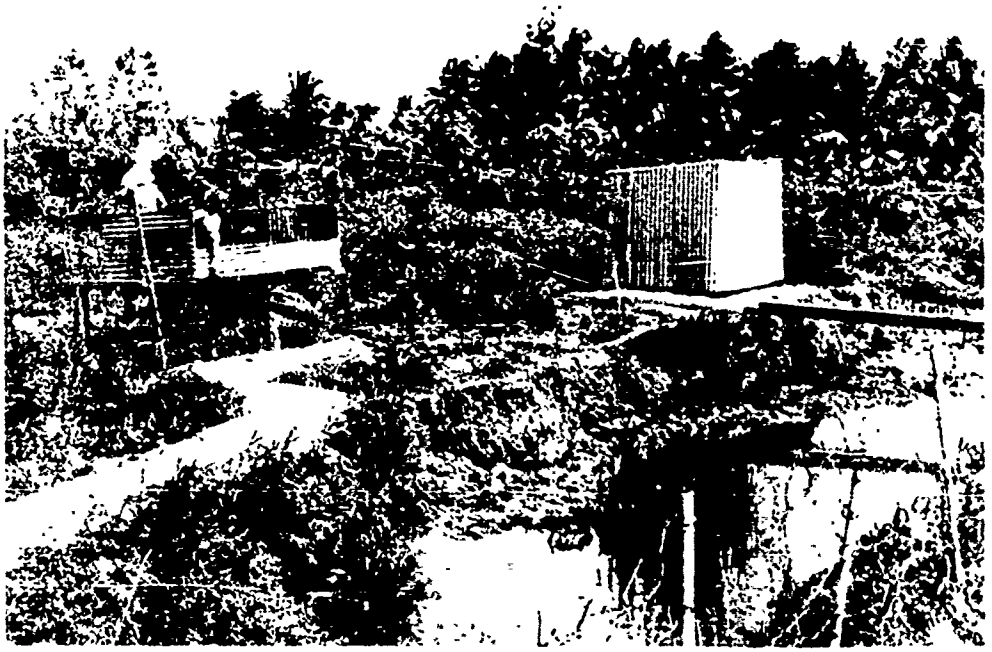
MAAG 2-5. Sergeant Mintz supervises loading of lumber onto 2½-ton WW II truck, which was on long-term loan from province public works chief for ECAD use. Materials were all purchased locally, insofar as they were available.



MAAG 2-6. Generator repair in hamlet near TAN AN. Sergeant Ollis, equipment maintenance supervisor, is discussing with civil guard squad the repairs required to get this generator back in operation. Project included rewiring of power unit and redistribution of electrical load. Generator produces power for village security and residential lighting.

Cost data: None

MAAG 2-7. Engineer training of civil guard squad at TAN AN. Sergeant Mintz (above left) is seen with 6 members of squad. Squad was introduced to military and civic action engineering. The squad was trained on all projects undertaken by TAN AN advisory team and received instruction and practical training in small engineer unit support of combat operations. The province chief, Major Xinh, agreed to continue using this squad on civic action construction missions, after departure of the advisory team. Old 2½-ton truck (right) given to the province by USCM, was lent to the advisory team for providing transport for the civil guard and for hauling construction materials.



MAAG 2-8. Latrine at TAN AN. A standard US military latrine box was constructed, and a corrugated metal screen was placed around it. To the left of the US type structure is a customary Vietnamese facility, which was not razed upon completion of project. Vietnamese prefer to squat rather than sit. In the Delta area their latrines are normally built on stilts over streams that carry away the waste matter. Although the US accomodation is more sanitary, and has a partition separating males from females, the local soldiers and their dependents refrain from using it. Materials were procured locally, and the civil guard camp, outside of which these latrines are situated, furnished the labor.

Cost data:

Material	$39.80
Labor	None
Total	$39.80

MAAG 2-9. Typical ARVN dependent housing in hamlet of THU THUA, a few miles northwest of TAN AN. Project calls for partitions in family quarters. Shacks are built by the individuals who occupy them. Materials were donated to the officer in charge for distribution in accordance with need. Eight sheets of masonite were given to eight families with seven or more children on the basis that increased privacy could be attained. The masonite found its way into a number of uses, two of which are shown on the next page. This is a materials issue only project.

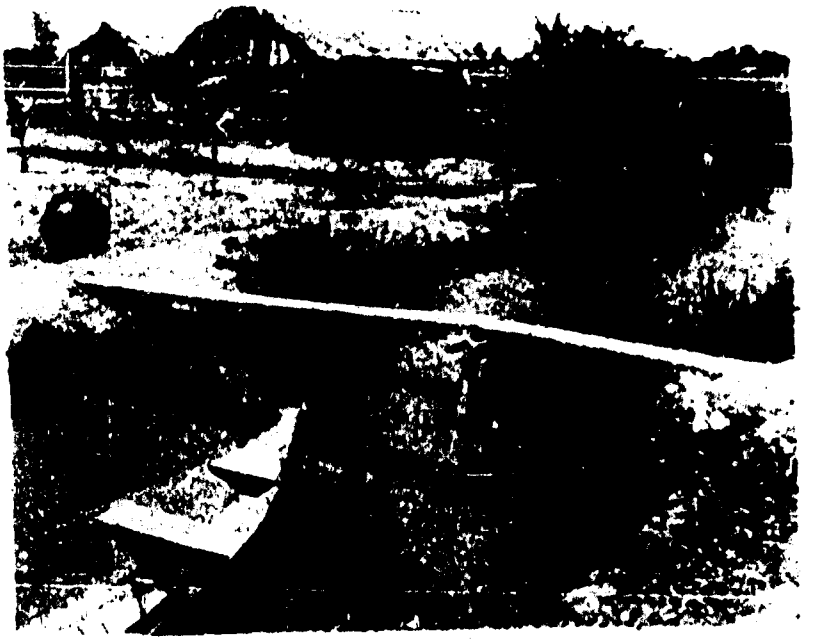
Cost data:

Material	$20.00
Labor	None
Total	$20.00

MAAG 2-9. A portion of an ARVN soldier's family is seen in front of partition he erected to secure a measure of privacy (top). Another sheet of masonite was used to extend a lean-to roof (bottom).

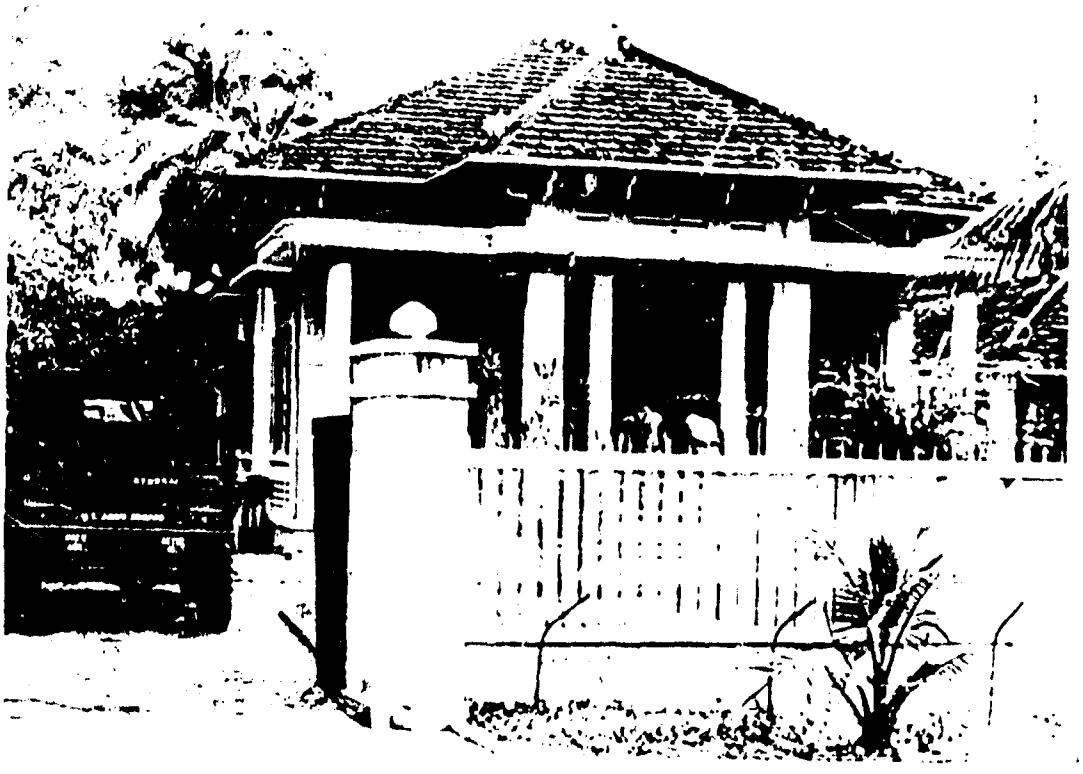
MAAG 2-10. Latrine at GIONG DINH hamlet near TAN AN, Vietnam. Sergeant Ollis is seen next to 12-place standard latrine box, built for use by elementary school students and personnel in a maternity hospital. The advisory team gave the materials to the hamlet chief for construction of shelter over the box on 5 July 1963. Inspection of site on 27 August revealed that work had not been accomplished. Natives are not interested in this type of latrine, preferring their own squat type facilities.

Cost data:		
	Material	$19.70
	Labor	None
	Total	$19.70



MAAG 2-11. Footbridges in hamlet of THU THU, 3 miles south of TAN AN. Advisory team gave planks to the hamlet chief for constructing 5 footwalks over a ditch. One of these is shown above, toward the end of the ECAD test. Only two other bridges could be located in the hamlet. The other two either were never constructed or disappeared. This apparently is a materials issue project.

Cost data:		
	Material	$28.80
	Labor	None
	Total	$28.80



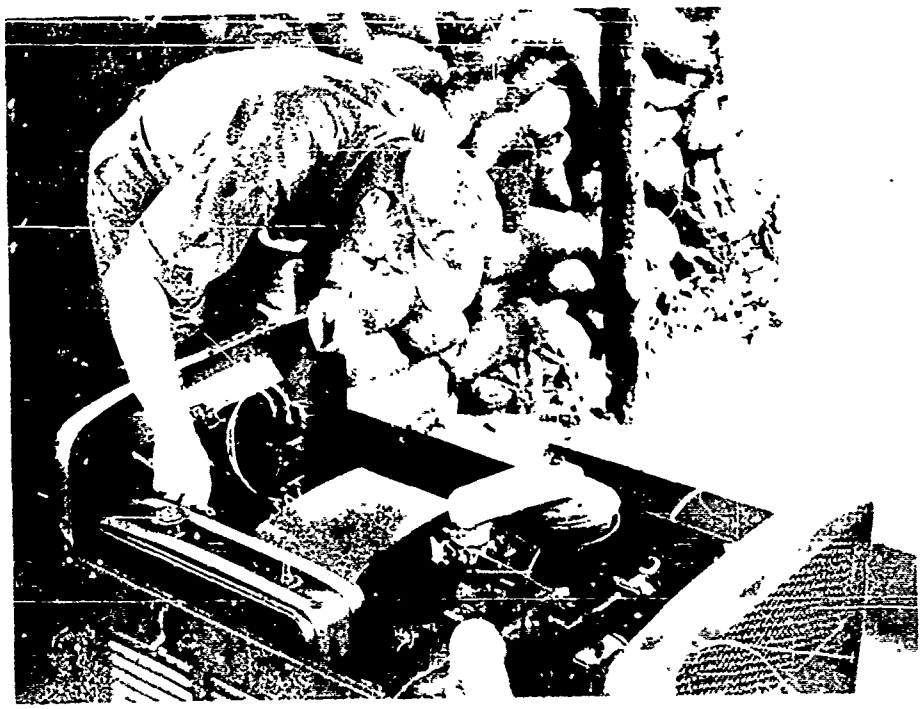
MAAG 2-12. Repair, renovation, and construction of facilities at TAN AN MAAG sector billets. Work included construction of clothes drying and generator shelters, repair of generator, and the clean out of a potable water tank. The advisory team shared these quarters with the MAAG sector advisory team during the period of ECAD test.

Cost data: None. Funded by MAAG.

MAAG 2-12. Clothes washing and drying shelter built over a concrete slab. Sidewalk may be seen at lower left.

MAAG 2-12. Sergeant Ollis repairing generator.

NAAG 2-12. Interior of water tower tank was cleaned thoroughly. Pump under tower was rebuilt. Tank provides storage for potable water supply.



MAAG 2-13. Inspection of generators in BINH PHOE district. LONG AN province. The province chief requested the advisory team to inspect all generators in the hands of civil works, civil guard, and self defense corps units in BINH PHOE district. Purpose of the inspection was to determine the quality of maintenance being performed and to train operators in preventative maintenance techniques and responsibilities. Minor repairs were made, where possible. Sergeant Ollis, maintenance supervisor on the TAN AN advisory team is shown inspecting generator.

Cost data: None.

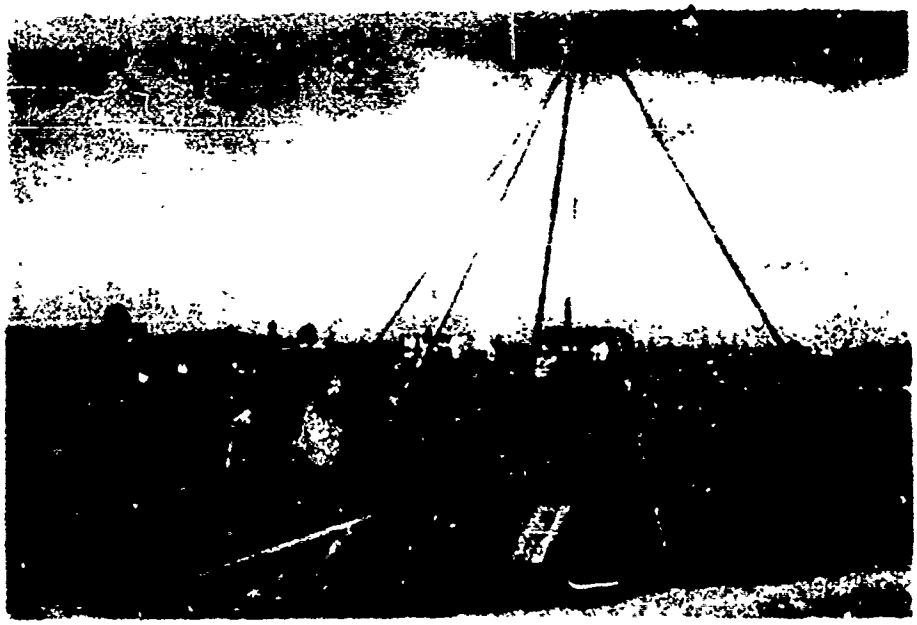
MAAG 2-14. View of maintenance shed at civil guard company, TAN AN, where grease rack is planned for construction. Advisory team gave the unit four USOM furnished WF-beams, shown on floor behind civil guard mechanic. WF-beams are planned for use as tread. When the guard unit can find strucural members for posts and framing, it will assemble the grease rack, using organic cutting and welding equipment. This is a materials issue project, which does not exploit capabilities inherent in the skills available in the advisory team.

Cost data: None.

MAAG 2A-1 Bridge repair project located in a strategic hamlet 8 miles east of C[illegible] LANH. The project included repair of abutments, reinforcement of pile bents, and replacement of an 18X3-meter deck. All work was completed except the redecking. While materials were expected from Saigon, the VC destroyed the incomplete bridge. The best estimate is that a mine was floated into position against the center pile bent and detonated electrically. This bridge was on an alternate MSR to Saigon. Materials and labor were provided by the local populace. The advisory team left Vietnam before the bridge could be replaced.

Cost data: None.

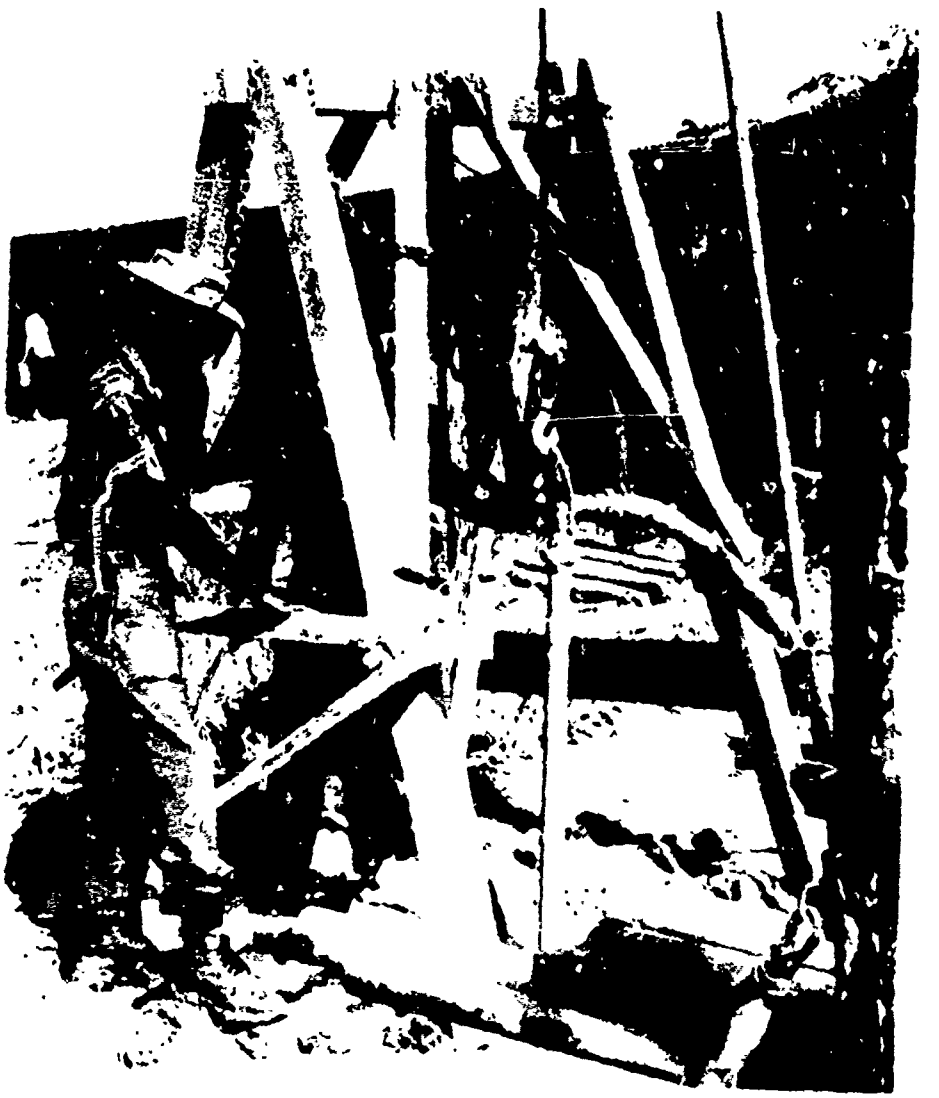
MAAG 2A-1. End view of destroyed bridge.



MAAG 2A-2. Well drilling at CAO LANH. Project required sinking a 2-inch galvanized steel pipe in coupled 10-foot sections. The portable well drilling rig, designed to penetrate about 135 feet, and pipe were furnished by USOM. Pipe had a high lead content, which made driving through impervious clay to depths exceeding design limitations of the rig tedious and difficult. The first attempt at this well was terminated at 165 feet when the pipe sheared at an intermediate coupling. A new well was commenced concurrently with pipe salvaging operations. The second attempt reached 220 feet, at which time the bearing in the water jet pump gave out. The rig was returned to USOM for repair, and could not be put back in operation prior to the advisory team's departure from Vietnam. The province commander has stated that he will use the SDC troops trained by the advisory team to complete this well and attempt other wells in the area, when the rig has been repaired. Note. There are no wells in the vicinity of CAO LANH. Surface water is processed for drinking and cooking.

Cost data: No outlay of funds by the advisory team.

MAAG 2A-2. Sergeant Hicks is shown at left controlling the rope wrapped around wheel extension, which transmits power through block assembly to weight above pipe. Two turns of rope around axle extension are required to obtain necessary purchase.



MAAG 2A-2. Sergeant Hicks supervising drilling operations. Four layers of different type clay were encountered in 220 foot depth.

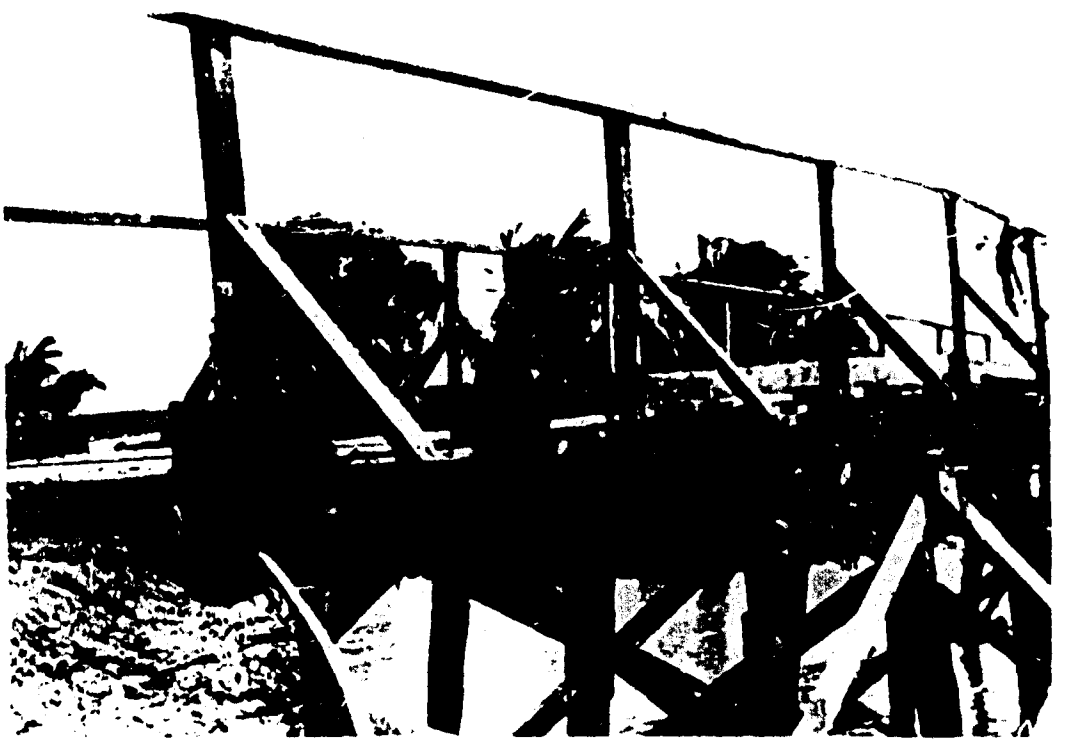
MAAG 2A-2. The top of 220 feet of pipe. In the background is a dependent housing area for an SDC unit in CAO LANH. This village will benefit from the well, when it is completed by the SDC drilling team trained by the advisory team. A few days before the termination of the MCAP test, water had risen in the pipe to within 1 inch of its top.

MLW 2A-3. Completed bridge at strategic hamlet number 2, AP MY TAN AN village, approximately 12 miles east of CAO LANH. Materials used were native timber piles provided by the village; steel WF-beams by USOM, and lumber for decking and wingwalls from ECAD funds. Bridge replaces former palm log footbridge and is rated at class 3. Light vehicular traffic now has access from the two hamlets of AP MY TAN AN to the highway running northeast to Saigon and west to CAO LANH. It took 6 weeks to complete delivery of the lumber ordered for this project from Saigon by the advisory team. Labor was donated by the hamlet beneficiaries.

Cost data:

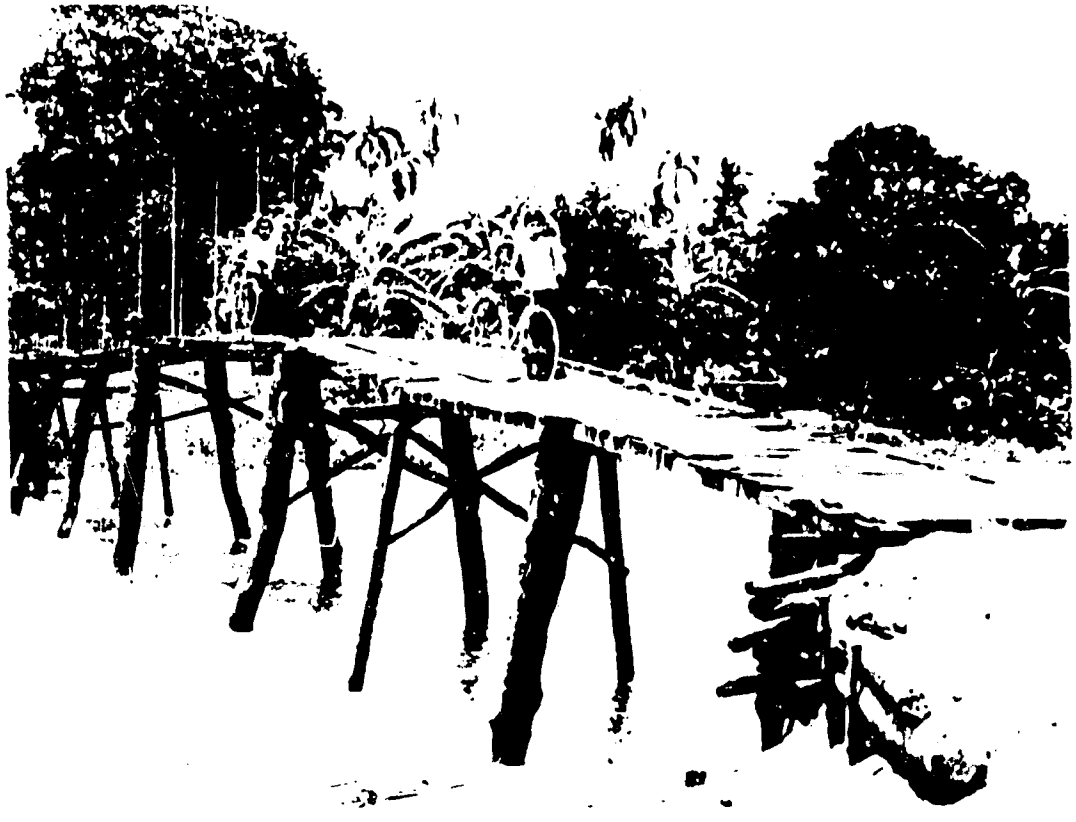
Material	$351.54
Labor	None
Total	$351.54

MAAG 2A-3. Standing on bridge are, left to right, Mr Le Tau Phat, village chief who has supervised construction of both strategic hamlets making up this village, Sergeant Wallinger, and Captain Bonnewitz, chief of the advisory team. The village is circumscribed by canals and hand dug moats. Inside these water barriers is a series of barbed wire entanglements, vines, spikes and other fortifications. An SDC Headquarters is located at the village center to facilitate rapid movement of militia to any point on the perimeter attacked by VC. The advisory team was limited to an hourly visit of the project site only twice daily. This had to suffice to inspect work accomplished, to lay out further work, and to advise as required. Lengthy visits, Mr Phat felt, would precipitate a VC attack.

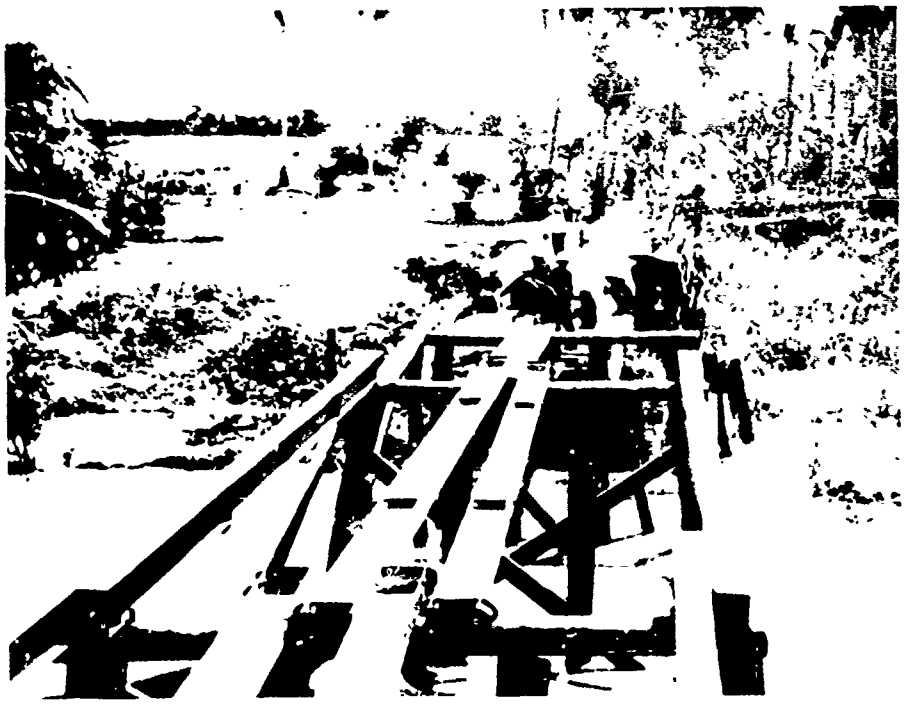


MAAG 2A-4. Bridge at AP MY PHONG near CAO LANH. Bridge is 34 meters long and 3 meters wide and will accept light vehicular traffic. Piles are 8-inch timber driven into position with a weighted platform, on which 4 men sit. Four guy lines are attached to the pile, which is pulled back and forth while the weight of the 4 men forces the pile into the river bottom until it reaches a firm footing. This was a self-help project with all labor and materials provided by the local hamlet except stringers which were provided by USOM. This bridge links 2 strategic hamlets with the main highway to CAO LANH and Saigon.

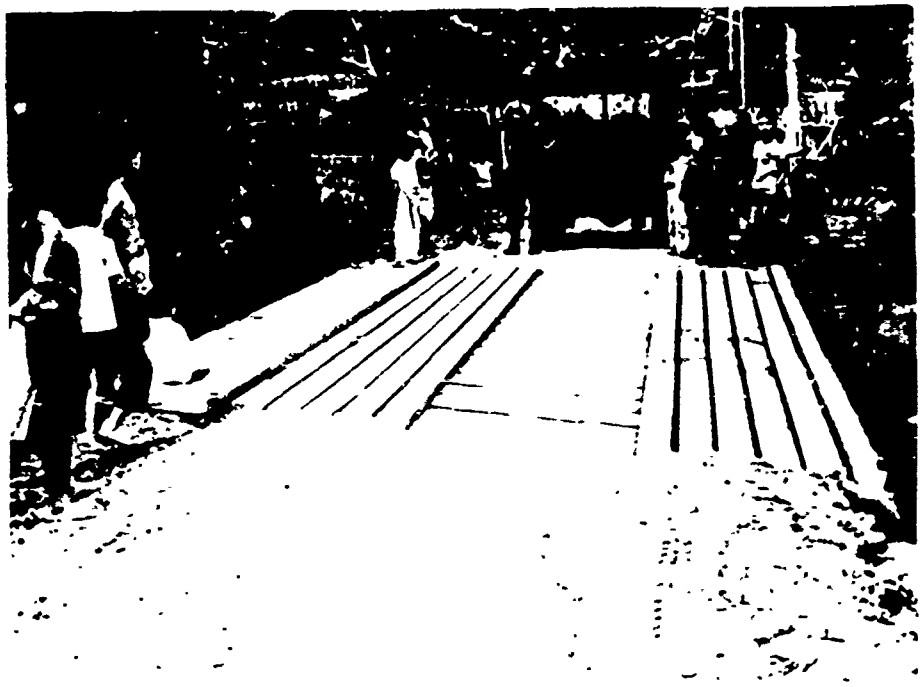
Cost data: None.



MAAG 2A-4. Two Vietnamese women cautiously pushing their bicycles across the dilapidated footbridge, which has been replaced by a new class 5 bridge.



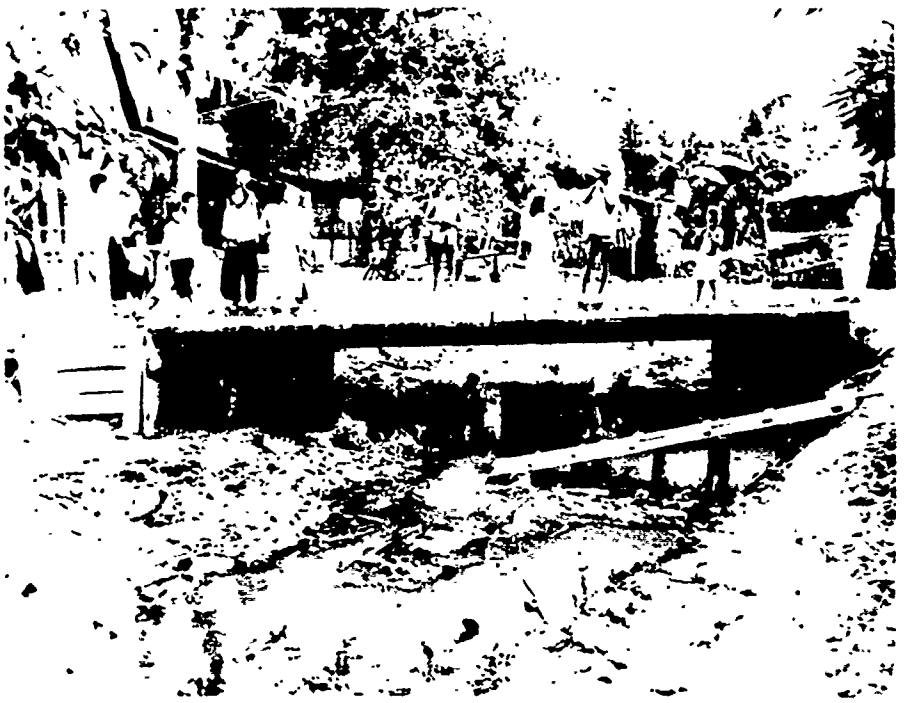
MAAG 2A-4. Bridge under construction in KIEN PHONG province on the Plain of Reeds. USOM-provided WF-beam stringers being positioned on bents. Suitable materials for bridge construction are not available throughout the Plain and all materials must be shipped from Saigon by barge or highway through VC-harrassed territory. Consequently, the advisory team experienced many extensive delays while awaiting materials.



MAAG-3-1. Bridge at AM HOI village near CAN THO. Bridge is class 10, single lane, 6.5 meter span, 3 meter width. Construction is of steel 8WF14 beam stringers and timber decking. Abutment approaches are hand-compacted earth fill. Wing walls are timber. Note walkway on left of bridge. Most vehicular bridges in Vietnam do not have special accomodations for pedestrians and cyclists. Stringers were furnished by USOM, and other materials were purchased locally. This bridge provides access to main farm-to-market road. Village nominated unskilled laborers for work on this project. Unskilled labor rates throughout Vietnam run from 55 to 70 cents per day. A welding torch was hired to cut WF beams.

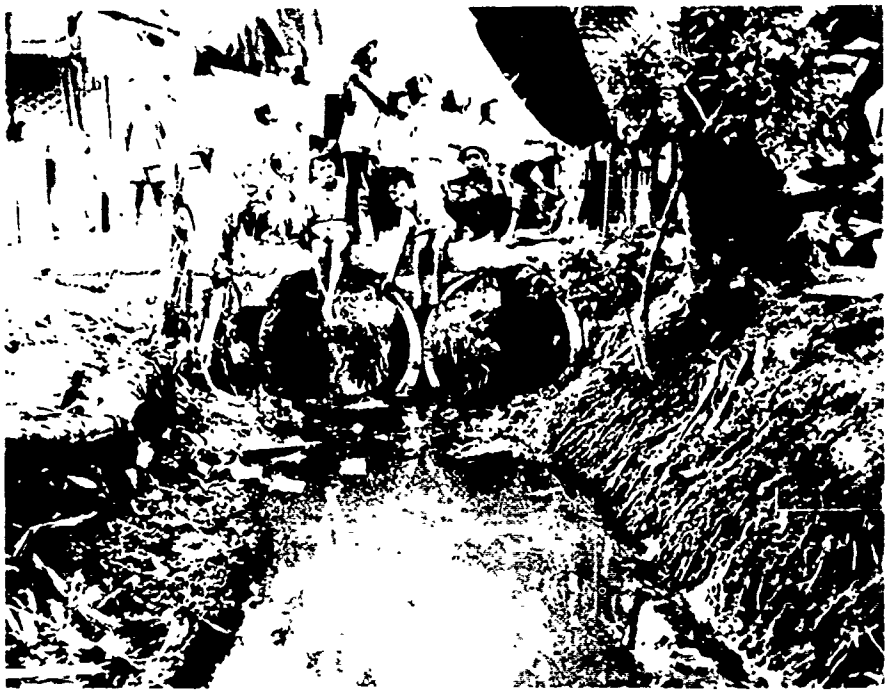
Cost data:

Materials	$259.73
Equipment	14.97
Labor	41.64
Total	$316.34



MAAG-3-1. Sido view of completed bridge. Note culvert pipes under ends of bridge. These have been filled with rocks and serve as abutment retainer supports. It is now low tide; at high tide water rises about 18 inches and carries sewage and garbage with it. At lower right may be seen ramp, common throughout Vietnam, which is used by natives at high tide to squat upon for bathing, washing clothes and dishes, and obtaining cooking water.

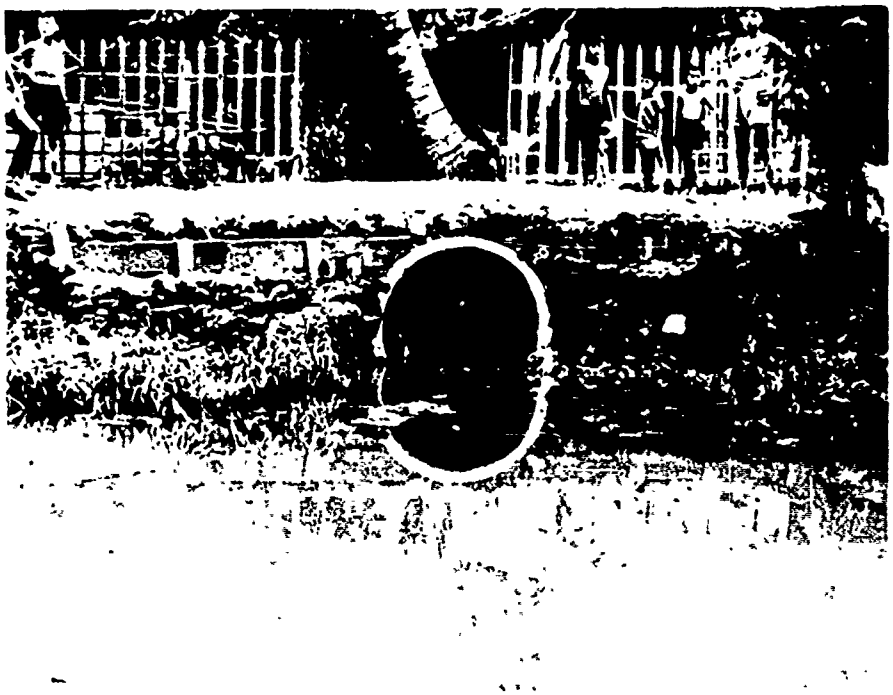
MAAG-3-1. Celebration on 28 June 1963 at village of AM HOI for completion of this bridge and 2 culverts. Receiving leis from village maidens are, from left to right, Sergeant Bunch, construction supervisor, Capt McKenzie, advisory team chief, and Major McCollum, Commanding Officer of the 534th ECAD. The celebration was attended by village, district, and province chiefs. There were speeches, music, and ribbon cutting ceremonies performed by the province chief. A banquet with provincial authorities, USOM representatives, and ECAD personnel, was held after the ceremonies.



MAAG-3-2. Culvert at CAN THO, made of 2 concrete pipes, each 1 meter in diameter, 3 meters long. Six-inch concrete walls were poured over ends of culverts. Culvert pipe was purchased locally. Hamlet provided civilian labor. Tripod with block and tackle from advisory team pioneer set was used to lower culverts into place. The completion of this culvert and bridge under project MAAG-3-3 make approximately 3 miles of inter-village road usable by vehicular traffic. Palm logs formerly provided for foot traffic only over this ditch.

Cost data:		
	Materials	$97.68
	Labor	20.61
	Total	$118.29

MAC-3-2. Close-up of concrete wall poured over end of culvert pipes. Fill taken from local area will be surfaced with crushed rock by province engineer personnel, after poor-quality-fill material has settled and dried.



MAAG-3-3. Culvert at AN HOI village near CAN THO, made of 1 meter concrete pipe, 4 meters long. Project includes construction of timber retaining walls over ends of culvert, and compacted earth and rock backfill. Culvert material was purchased locally and the hamlet furnished civilian labor. Cement planned for use on wingwalls was stolen, and agreggate was scattered by persons unknown. Form lumber instead of concrete was used for wingwalls. This project, in conjunction with projects MAAG-3-1, bridge, and MAAG-2 culvert, made 3 miles of existing village road usable for vehicles.

Cost data:		
	Materials	$44.98
	Labor	27.47
	Total	$72.45

MAAG-3-3. Province Chief, Major Tr n Ba Di, inspects culvert. Flower bedecked US Officers, standing next to the Province Chief are Major McCollum, Commanding Officer, 534th Engineer Control and Advisory team on the left, and Captain McKenzie, Advisory Team Chief. Other persons seen are officials of USCM, AM HOI village, and the local district.

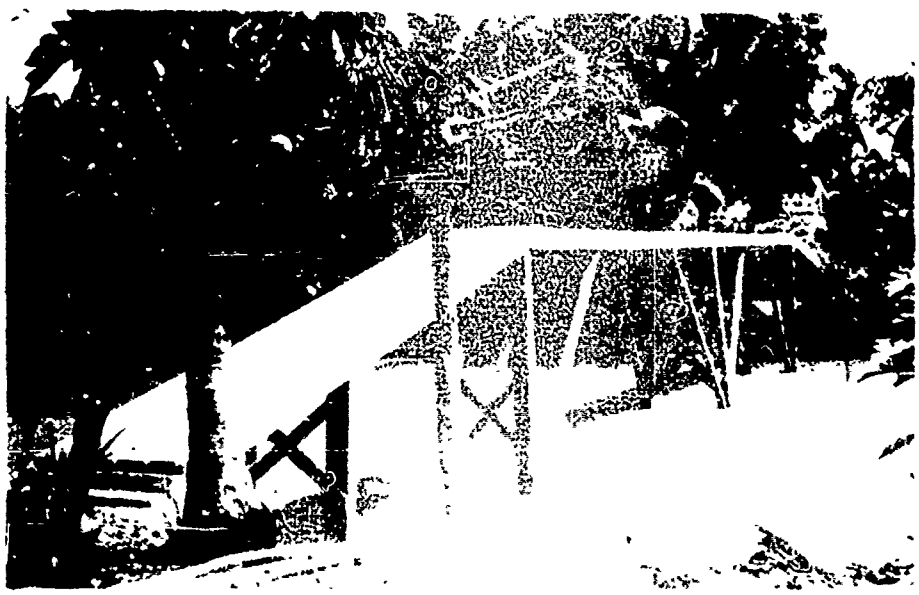
MAAG-3-4. Culvert at YEN THUONG village, near CAN THO, made of 1-meter diameter pipe, 4 meters long. Project included palm log retaining walls over culvert ends, and compacted earth backfill. All meterial was purchased locally, and the hamlet furnished civilian labor. Culvert carries water from river back up into hamlet at high tide. Village was so overjoyed to have this culvert that the populace staged a celebration.

Cost data:		
	Materials	$51.80
	Labor	59.20
	Total	$111.00

Man standing second from left is hamlet chief, observing culvert under construction at low tide.

PAAG-3-4. Banner at entrance to village of YEN THUONG welcomes 524th TCAP members to celebration. Crushed rock at right, for paving the street, was funded by USCM.

MAAG-?-4. Phong Dinh Province Chief, Major Tran Ba Di, cuts ribbon officially opening bridge to traffic. Two maidens of YEN THUONG village assist in the ceremony.

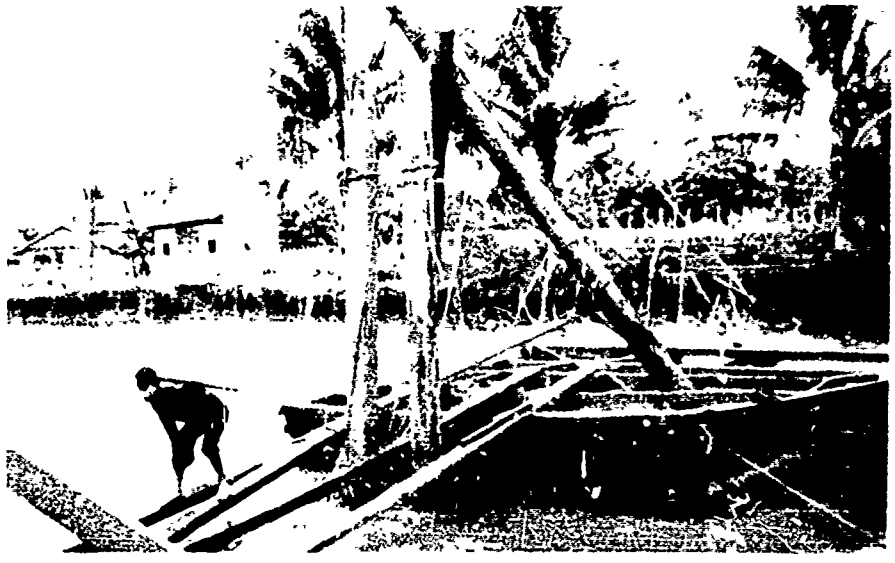


MAAG-3-5. Footbridge at BINH NHUT hamlet near CAN THO. Piles were driven by hand using scaffold mounted on 2 assault boats. Bridge is 35 meters long, 1 meter wide. Construction includes concrete end footers, 8X8-inch posts and 2X8 stringers and decking. Hand rails were added later. All material was purchased locally and the hamlet provided civilian labor. Bridge makes foot and bicycle traffic possible between two strategic hamlets and leads to a farm-to-market road.

Cost data:		
	Materials	$496.94
	Labor	38.00
	Total	$534.94

[illegible] ..oco, LCAD Evaluator, and Captain [illegible] Chief of advisory team, inspect project.

MAAG-3-5. Local civilian truck, provided by the province engineer, delivering materials to bridge site. Sergeant Heppes is seen supervising the activity.

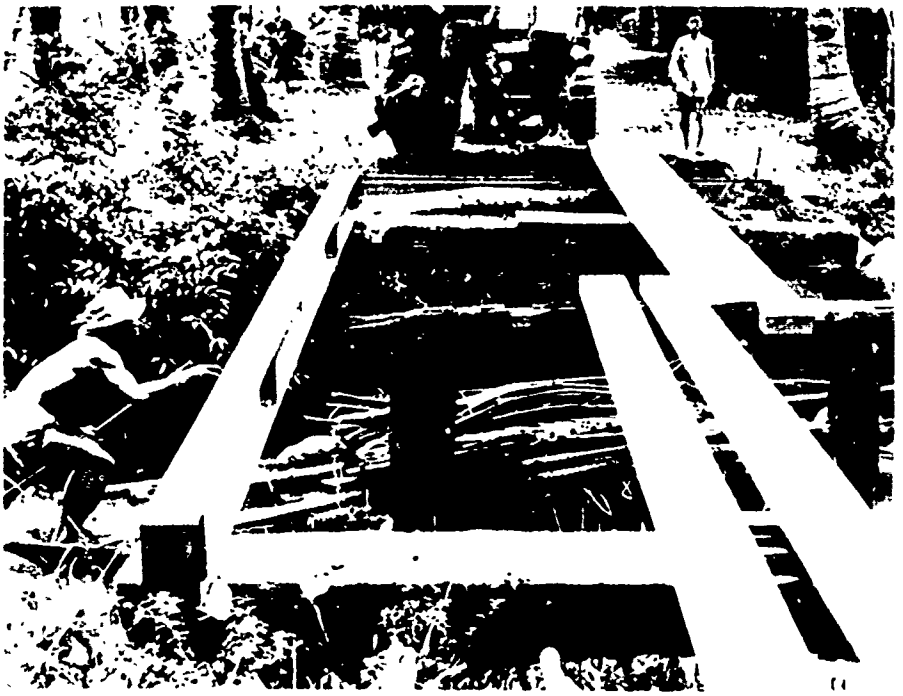


MAAG-3-5. Pile driving operation from floating platform supporting A-frame. Four men raised hammer by hand to drive piles.

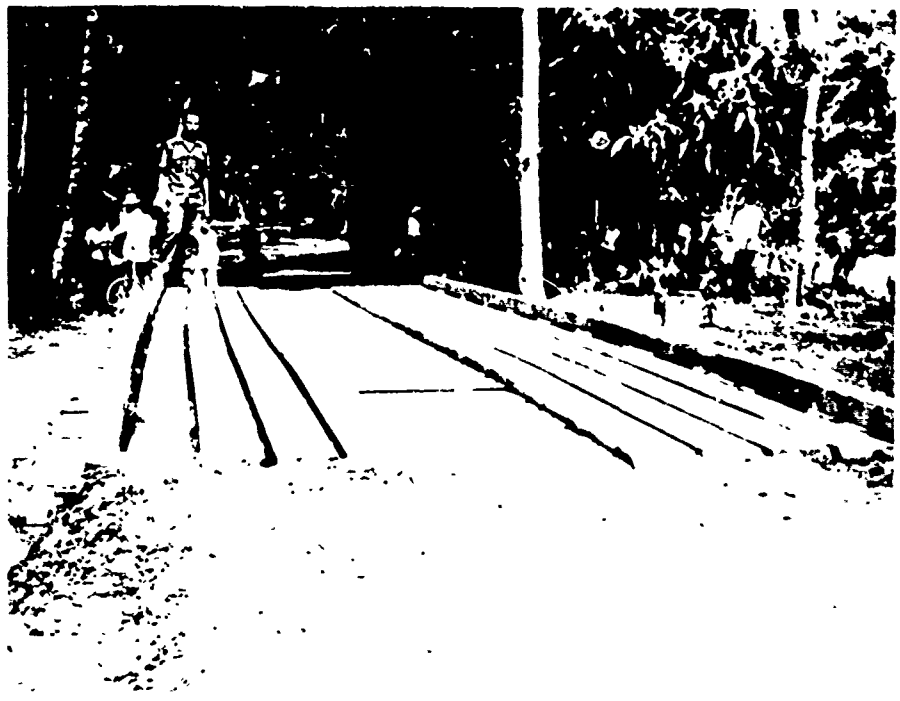
MAAG-3-6. Bridge at BINH NHUT hamlet near CAN THO. Bridge is class 20, 9.5 meters long, 3 meters wide, 3-span. Project includes WF beam stringers, timber decking, and poured concrete end footers. Two existing concrete bents were used. WF beams were furnished by USOM, and all other materials were purchased locally. Labor was provided by local hamlet. This bridge and another constructed under project MAAG-3-7 made available to vehicle traffic approximately 6 miles of existing road servicing several hamlets. Equipment rental was for oxy-acetylene torch, used to cut WF beams to size.

Cost data:		
	Materials	$427.13
	Equipment	4.67
	Labor	27.49
	Total	$459.29

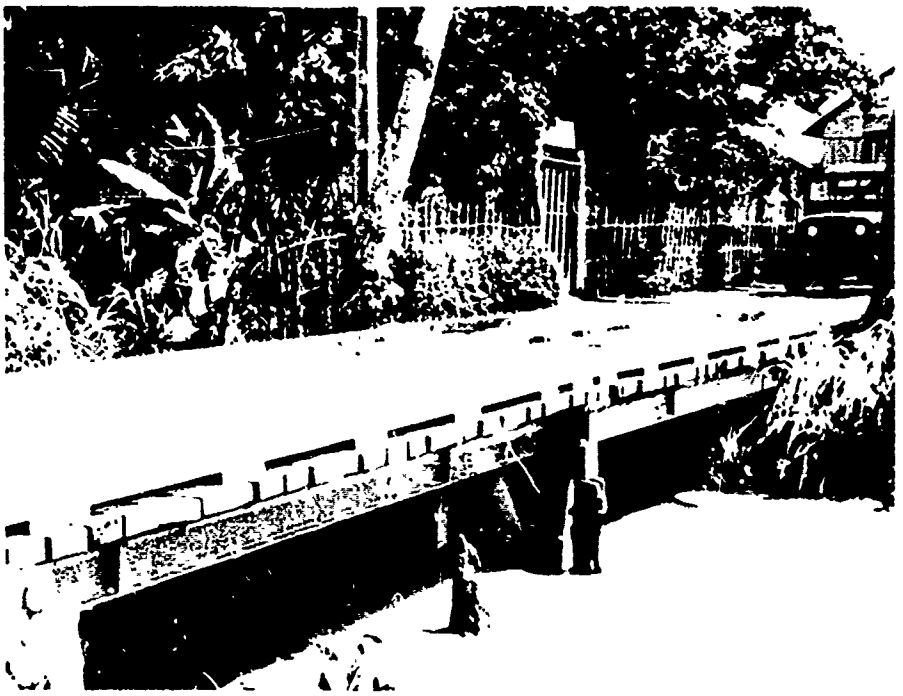
MAAG-3-6. Bridge site before construction of new bridge. Palm logs across bents provided for foot traffic. Concrete and timber bents from previous bridges can also be seen.



MAAG-3-6. Bridge under construction. Here an 8WF14 beam stringer is being emplaced. Note self defense corps security guard with carbine on far shore. At least one SDC squad always provided security for advisory team personnel, labor force, and materials on this project. Two VC were killed in a raid on this hamlet while the bridge was under construction.



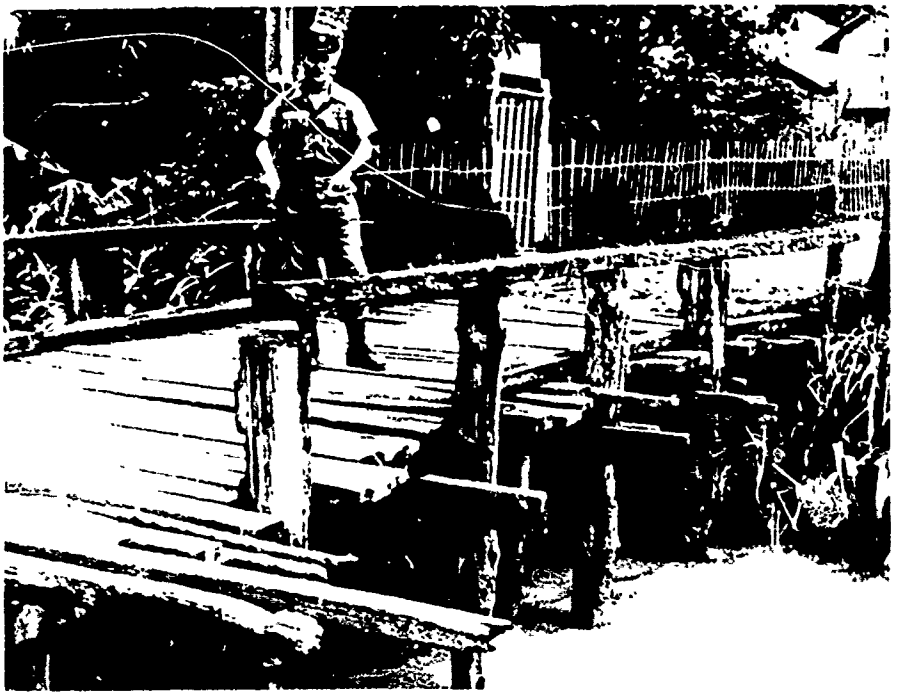
MAAG-3-6. End view of completed bridge. Material for approaches came from the vicinity of the bridge site, and was hand tamped with tampers from advisory team's pioneer tool kit.



MAAG-3-7. Bridge constructed at BINH NHUT hamlet replaced rickety bridge seen in next photo. Project included a center bent with piles driven by hand. Stringers are 8WF14 beams provided by USOM. Decking and wearing tread are 2X8 timber material. Bridge is rated class 12. This bridge and the bridge constructed under project MAAG-3-6 make vehicle traffic possible for approximately 6 miles along a wide canal.

Cost data:

Materials	$430.87
Labor	48.79
Total	$479.66



MAAG-3-7. Captain McKenzie, advisory team chief, reconnoitering original bridge. Note that caps are bolted to sides of piles instead of scabbing and bolting them to pile tops. Such practices, wherein strengths of materials are not fully exploited in construction, are common throughout Vietnam.

MAAG-3-7. Advisory team sergeant giving on-the-job training to unskilled hamlet civilians. Here Sergeant Wenpes is showing workers how to space decking timbers. In some cases, unskilled workers had to be shown how to use a saw and hammer; in others, workers had some previous knowledge of the use of hand tools.

MAAG-3-8. Footbridge at BIN PHO hamlet, near CAN THO. Bridge of 3 spans is 1.50 meters wide by 10 meters long. Piles are USOM-provided 8WF14 steel beams left over from other projects. Cross members were welded to piles to form "T" supports. Welding equipment was rented. Civilian welding rod was replaced by rod from stocks donated by ARVN. Bridge provides access between 2 hamlets and connects path with farm-to-market road. Bridge replaced structure shown on the next page.

Cost data:

Material	$90.60
Labor	26.75
Equipment	17.45
Total	$134.80

MAAG-3-8. Palm log pile structure used by villagers to carry their produce to market, prior to replacement by a wider and better bridge.

MAAG-3-9. Completed footbridge in the strategic hamlet of AN HUNG near CAN THO. Project is timber trestle design using 8X8 inch posts and 2X8 stringers. Decking is 1-inch material. Bridge has 6 spans, is 1.50 meters wide and 24 meters long. This was a self-help project with all volunteer labor. USOM provided approximately $217.00 worth of materials. Bridge provides for intrahamlet foot traffic. It replaced a dilapidated palm log bridge.

Cost data:		
	Materials	$230.56
	Labor	None
	Total	$230.56

MAAG-3-9. Details of construction. All timber used is mahogany. Palm log piles from former bridge may be seen. Palm logs have a useful life of about 2 years when submerged in tidal water.

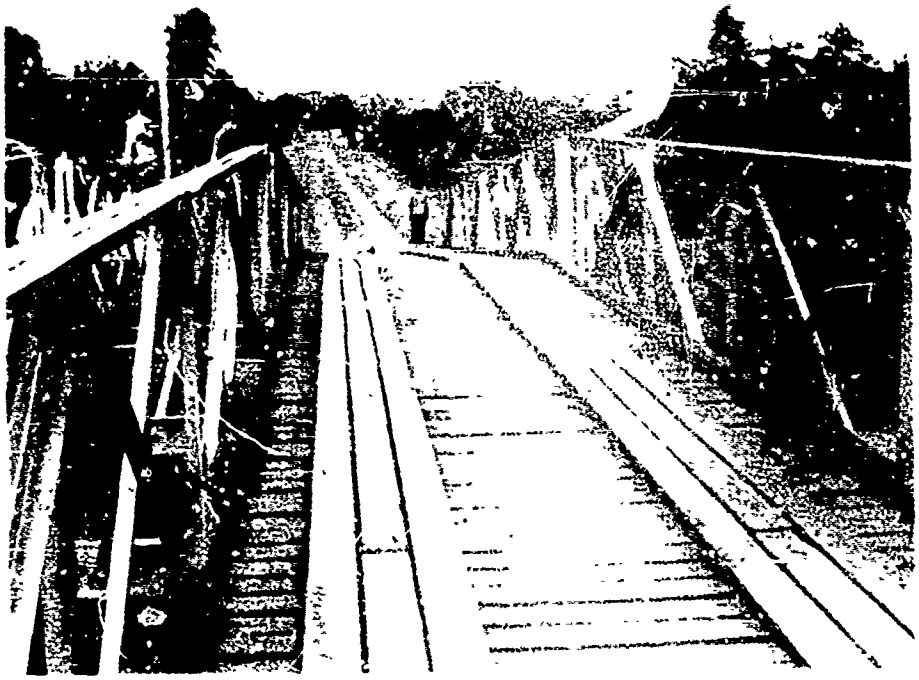
MAAG-3-10. Sergeant Bunch, construction supervisor on footbridge just completed at BINH PHO hamlet, near CAN THO. Bridge is 21 meters long, 0.85 meters wide and has 7 spans. Superstructure was built over sound concrete bents remaining from previous bridge. Most materials used were excess to other ECA projects in the area. Bridge assists travel between hamlets and connects path to farm-to-market road. Site is typical of many in the Mekong Delta area, where dense jungle areas, frequently lining rivers and canals, make VC infiltration difficult to detect. Most tributaries in the Delta area receive tidal action. Bridge design and construction must permit clearance for canal traffic at high tide.

Cost data:		
	Materials	$ 7.01
	Labor	70.72
	Equipment	24.74
	Total	$102.47

MAAG-3-11. Sergeant Bunch watches sampan being rowed under bridge recently constructed. Bridge has 4 spans and is 2 meters wide, 18 meters long. It is timber trestle design and will handle vehicle traffic up to class 4. Canal bottom was extremely silty, requiring piles to be driven 15 feet below stream bed before resistance was reached. Piles were driven by hand by local civilians, under the advisory team's supervision. All materials were provided from ECAD funds.

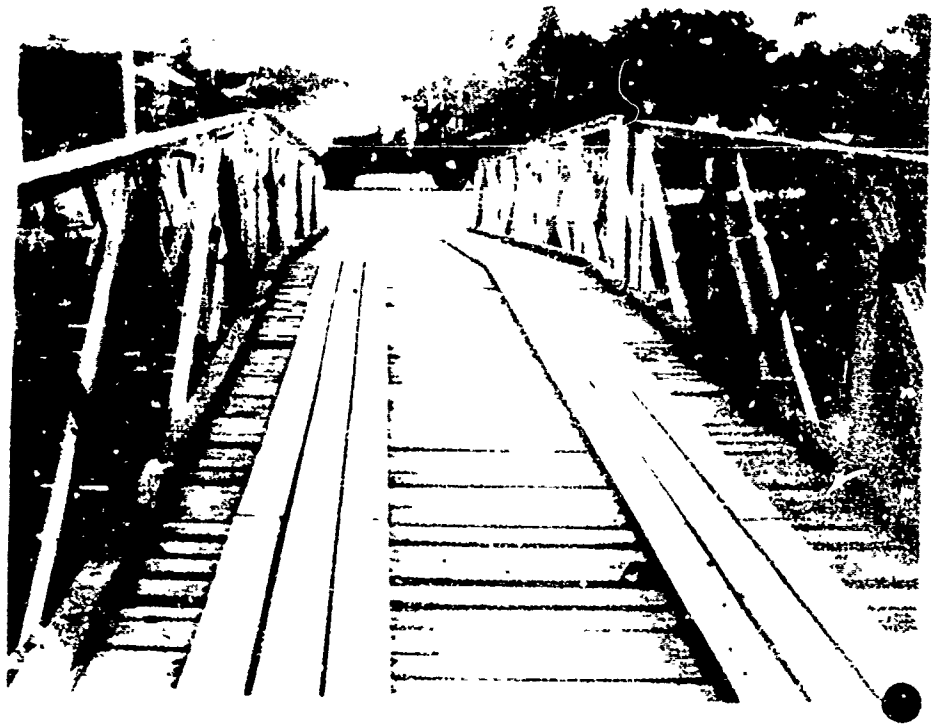
Cost data:		
	Materials	$275.81
	Labor	26.25
	Total	$302.06

MAAG-3-11. Bridge viewed from the end. This bridge links 2 strategic hamlets. Lumber is not stocked in convenient sizes and lengths and must be ordered to size well in advance of requirements. Order-and-shipping times of 30 days are not uncommon in remote areas, where either timber source or milling facilities are not available.



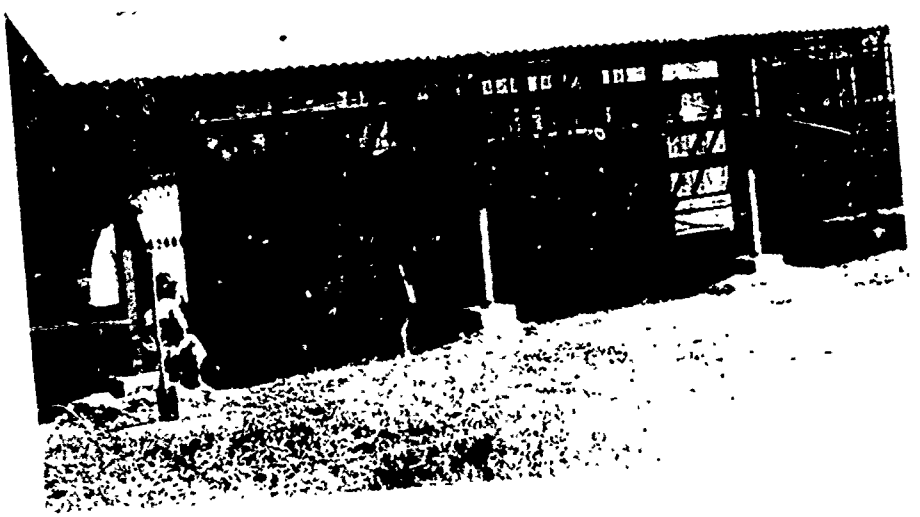
MAAG-3-12. Bridge at TAN AN VIE hamlet near CAN THO. The advisory team supervised replacement of wearing tread and rotten decking on 1 lane of a 2 lane highway bridge, 360 meters long. Bridge was structurally sound, except for treadways and a few deck timbers. Traffic in excess of class 4 is detoured across this bridge on the MSR south of CAN THO. The PHONG DINH province engineer plans to replace the class 4 bridge next year with a new heavier duty structure.

Cost data:		
	Materials	$233.64
	Labor	10.30
	Total	$243.94



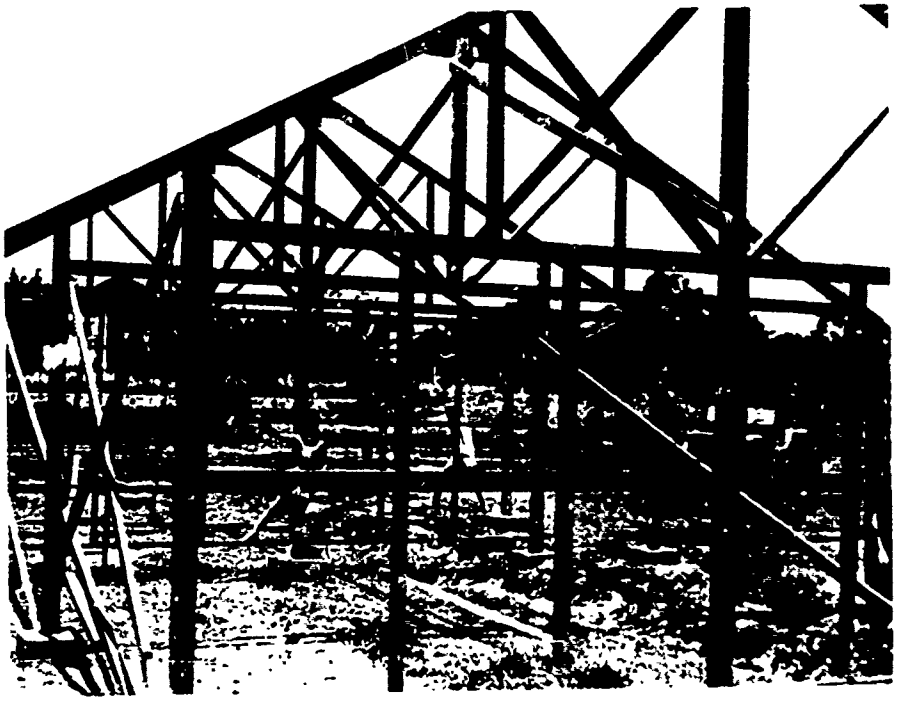
MAAG-3-13. Bridge in TAN AN VIE hamlet, vicinity of CAN THO. This is a decking repair and treadway replacement project on a single lane bridge adjacent to the bridge repaired in Project MAAG-3-12. The total project was divided into two parts due to local imprest funding r ılations limiting expenditure on each item of materiel per project $250.00. The same size lumber was used for deck and treads.

Cost data:		
	Materials	$229.93
	Labor	10.30
	Total	$240.23



MAAG-3-14. School at BINH LOE VIE, near CAN THO, Vietnam. Project includes construction of a primary school having 2 rooms, each 7.1 meters by 7.0 meters. Construction followed standard school engineering drawings prepared by the control team of the 534th ECAD for the province engineer. Project MAAG-A-3 time and fund limitations permitted undertaking only 2 rooms of the 7 room structure planned. The other 5 rooms will be constructed by the hamlet, using personnel trained by the advisory team, as additional materials are obtained.

Cost data:		
	Materials	$288.60
	Labor	27.49
	Total	$316.09



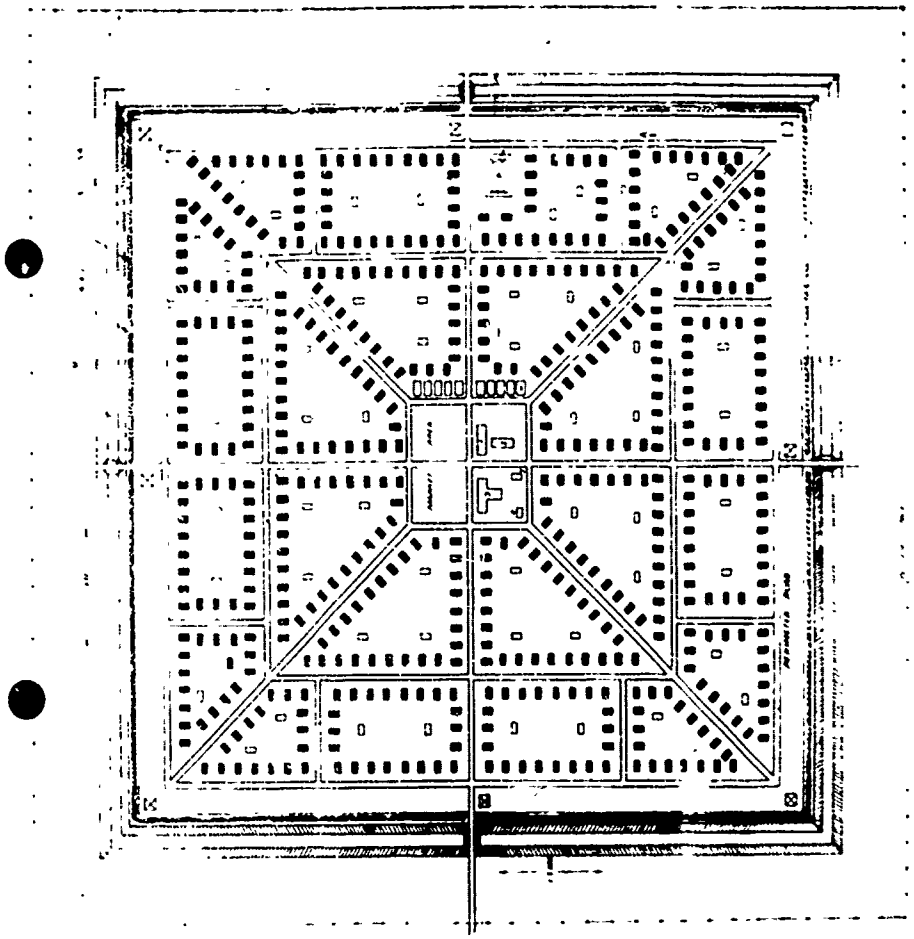
MAAG-3-14. Details of framing and footers.

MAAG-A-1. Preparation of as-built drawings. As-built drawings were prepared by the draftsman assigned to the control team of the 534th ECAD in CAN THO. These were drawn from field sketches and bills of materials for selected project sites prepared by advisory team personnel operating in DINH TONG, LONG AN, and PHONG DINH Provinces. A total of 14 as-built original drawings were prepared and turned over to public work offices in these provinces. None are available for inclusion in this report, but many of them have been reviewed by members of the ECAD evaluation team and found to be satisfactory. The purpose of these drawings is to facilitate material requirements for maintenance of structures and to provide a basis for designing new structures of similar types.

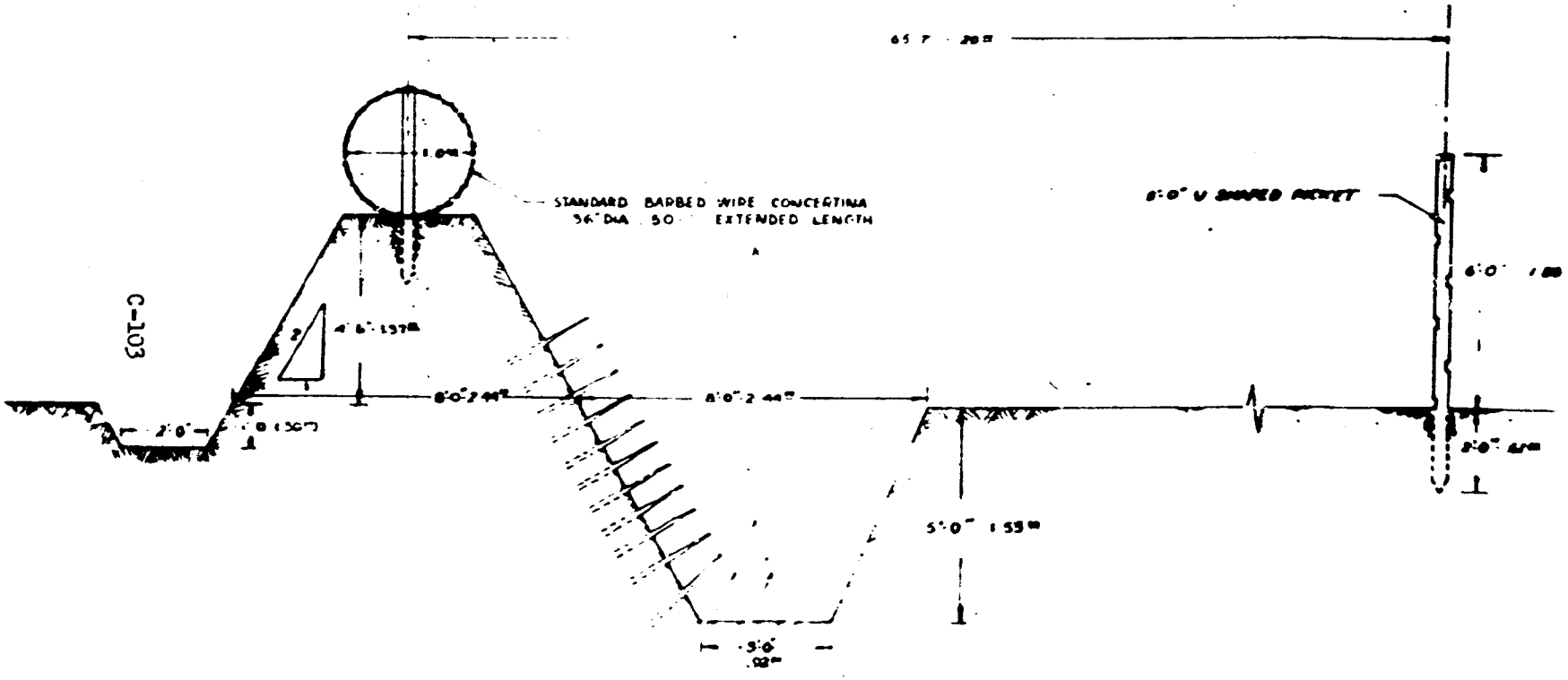
Cost data: None.

MAAG-A-2. Strategic hamlet design. The ACTIV ECAD Test plan has a stated objective of testing teams in "formulation of improved engineering design and area layout for strategic hamlets." Neither ECAD became involved in planning or constructing strategic hamlets in the normal course of operations during the test. Usually Vietnamese district chiefs have the responsibility of supervising construction. On rare occasions, some equipment support is given by Army engineer units or public works offices, but in most cases, digging the moat, installation of fortification materials, and all construction is accomplished by hand by the persons who are going to reside in the village. To comply with the test requirements, the 534th ECAD was given the mission of preparing an improved hamlet design. Basis of departure was a Vietnamese Joint General Staff Memorandum, which depicted a typical hamlet layout. This memorandum is used as a basis for requisitioning materials, not for construction guidance. Selected drawings from this ECAD test design project follow on pages C-102 through C-107. These are a decided improvement on the sketchy designs made available to the control team.

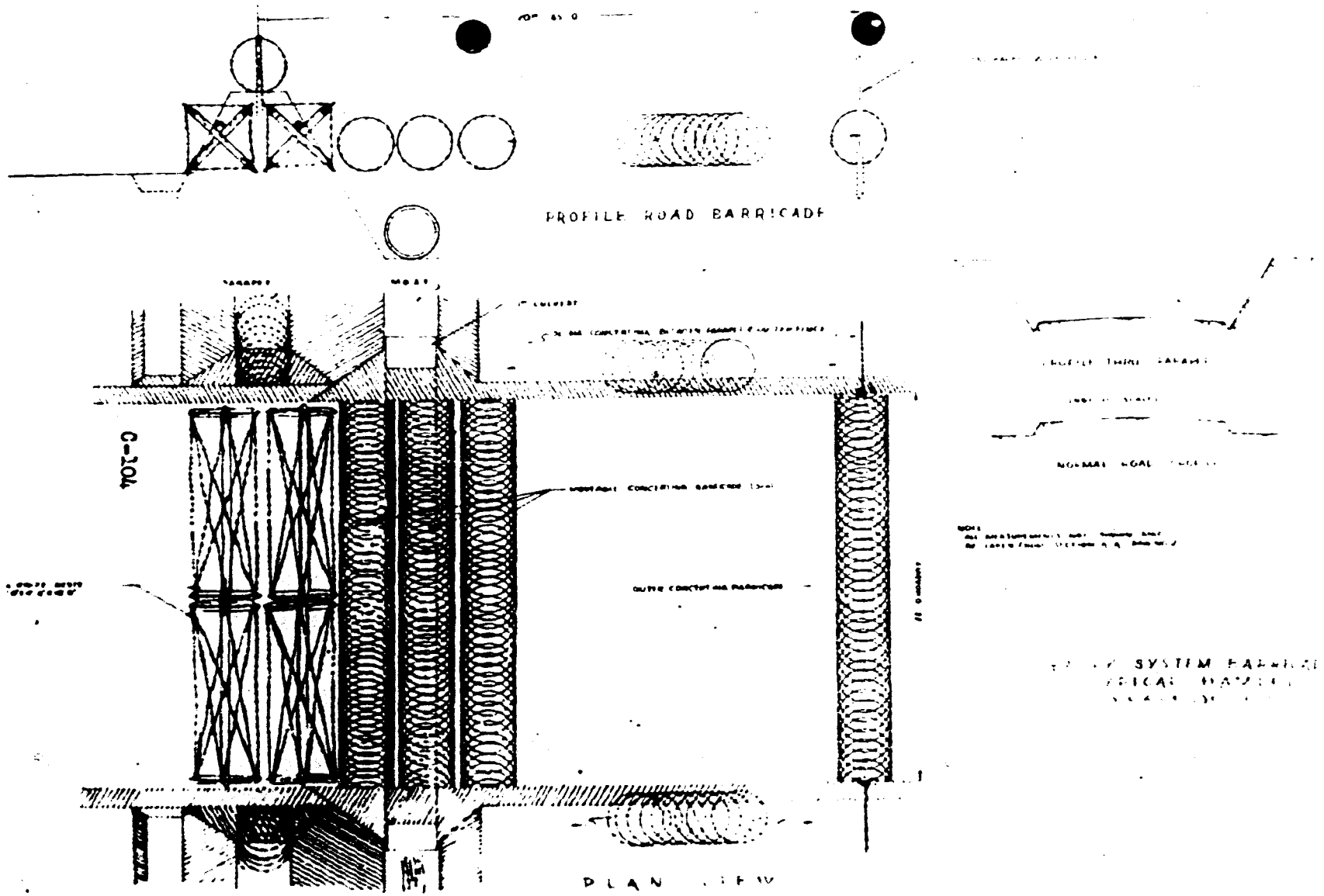
Cost data: None.



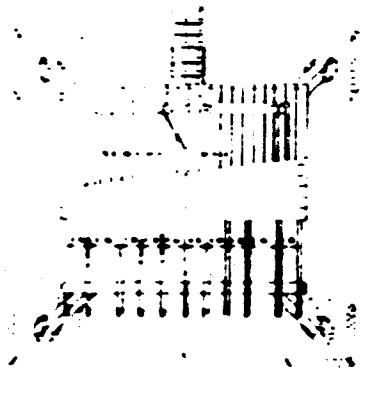
MAAG-A-2A. Area Layout.



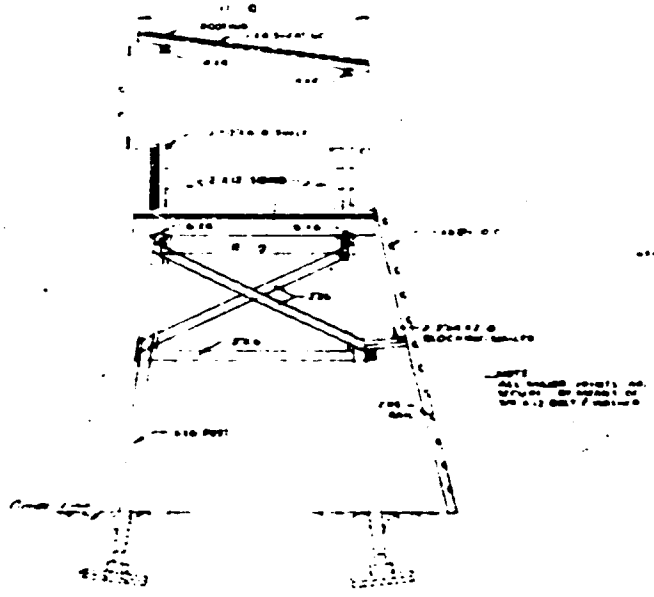
MAAG-A-2B. Cross-sectional area of moat and fences.



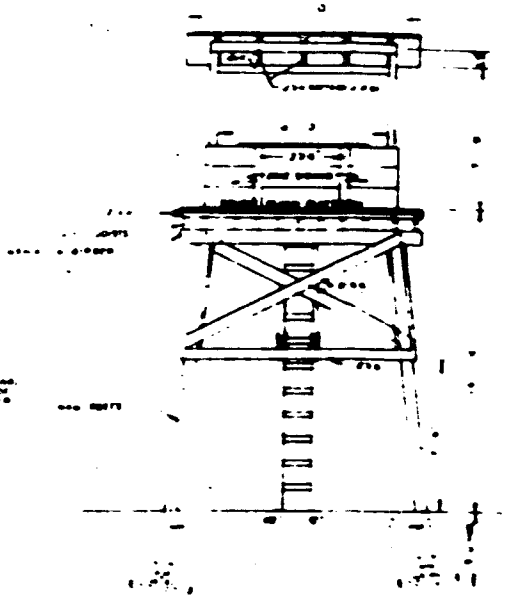
MAAG-A-2C. Obstacles for entrances.



PLAN CUT AWAY



SECTION

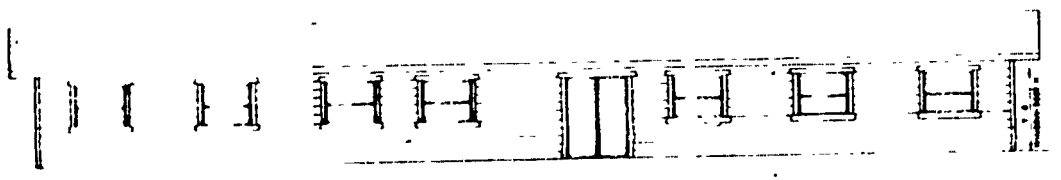


FRONT ELEVATION

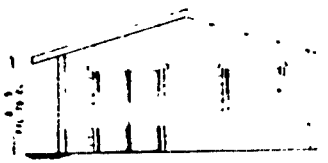
521-Q

GUARD TOWER 11 X 11
TYPICAL INSTALL

MAAG-A-2D. Guard Tower

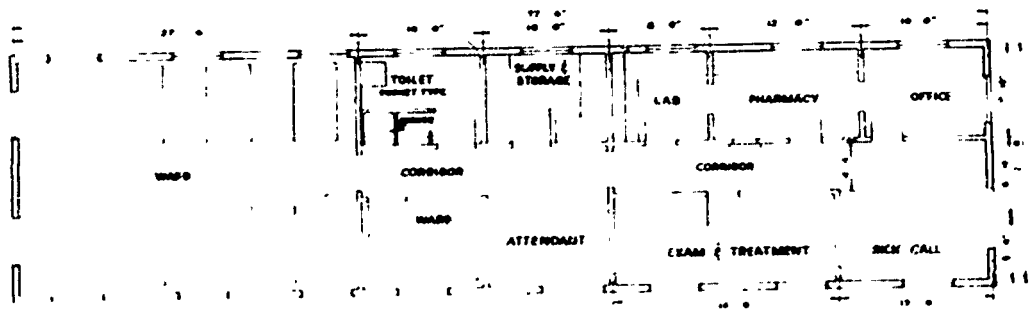


FRONT ELEVATION



END ELEVATION

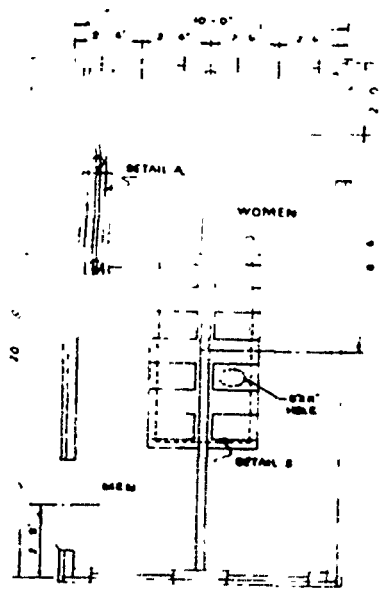
C-106



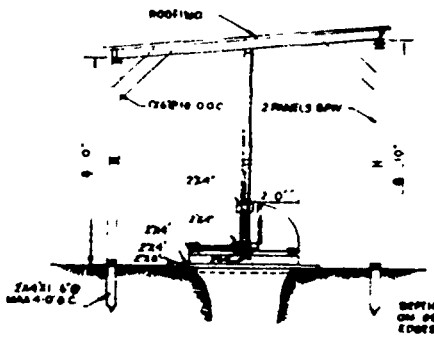
PLAN VIEW

DISPENSARY WITH BEDS
20 x 77 - 6
TYPICAL HAMLET

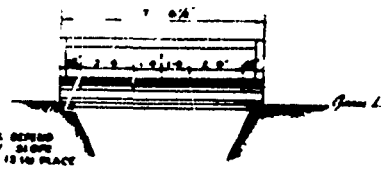
MAAG-A-2E. Dispensary



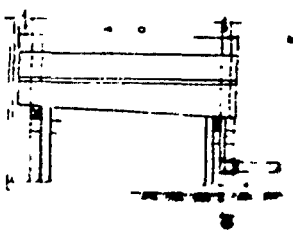
PLAN VIEW

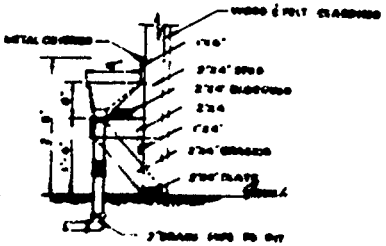


END ELEVATION



DETAIL B





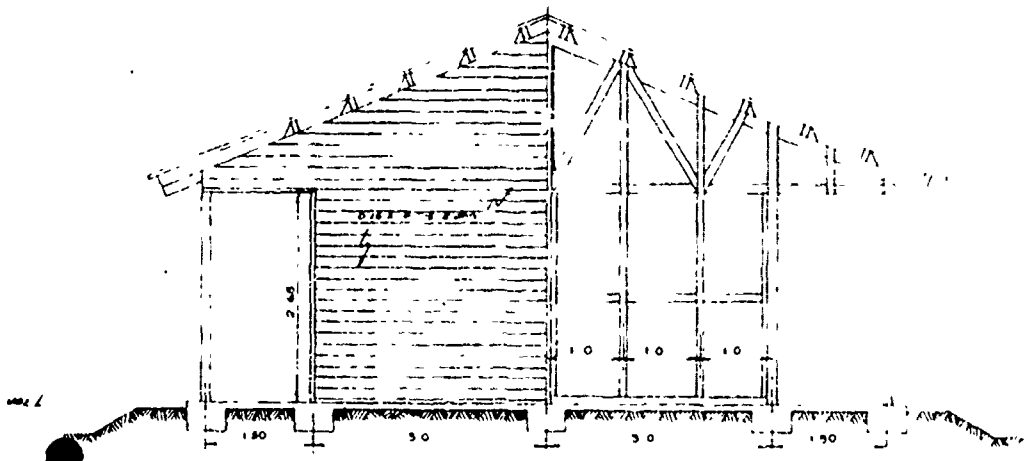
DETAIL A
URINAL SUPPORT

LATRINE PIT TYPE 10 X 20
160 MAN WOMAN
TYPICAL HAMLET

MAAG-A-2F. Pit latrine adapted for use by Vietnamese personnel.

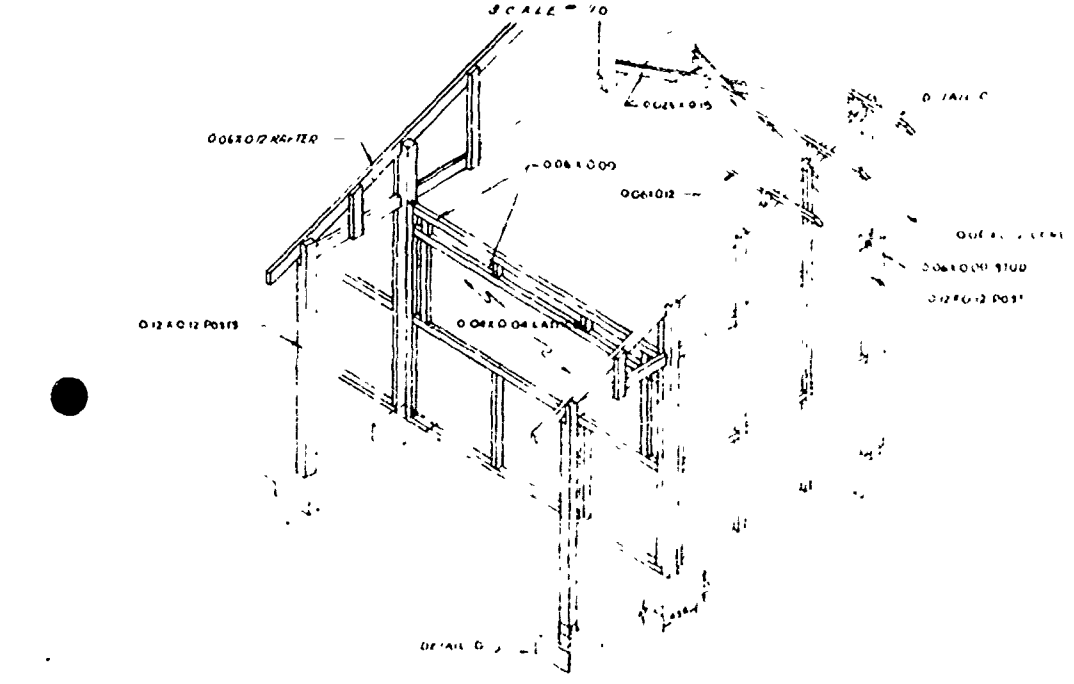
MAAG-A-3. Design of 7-room elementary school. Design and bill of materials for this project are contained on pages C-109 through C-116. The design was prepared after USOM standards for elementary schools, for a hamlet in BINH LAC district, near CAN THO. This project, of the self-help type, had not been anproved by USOM, and it did not appear that it would be before the test ended. With limited funds and time remaining, the CAN THO advisory team initiated and supervised construction of the first 2 of the 7 rooms under project MAAG-3-14.

Cost data: None.



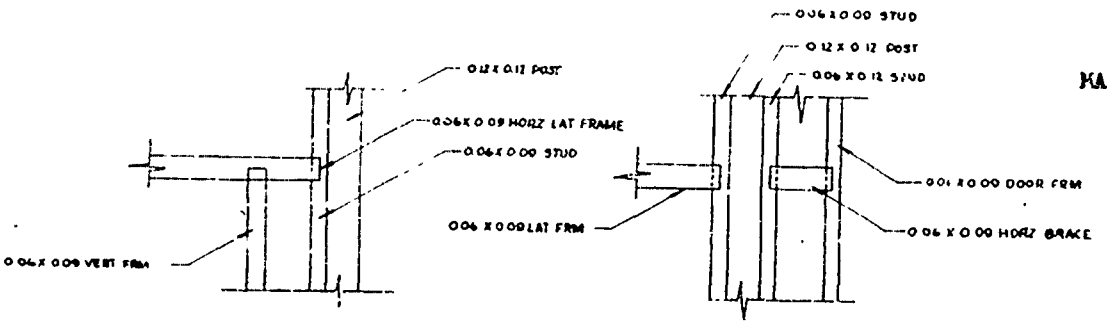
END ELEVATION

SCALE = 1/0



FRAME STRUCTURE.

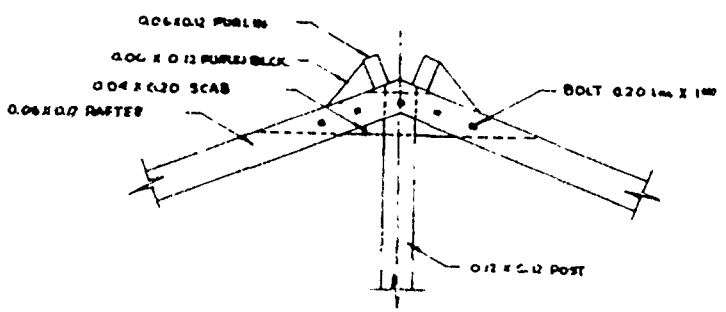
SCALE = 1/0



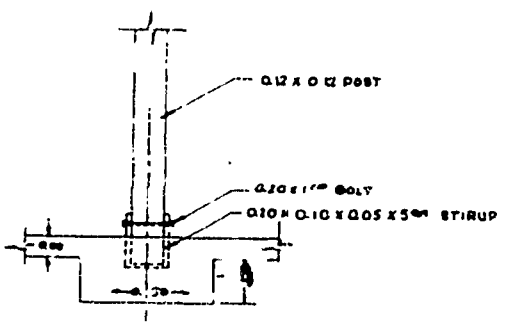
DETAIL A

DETAIL B

C-111



DETAIL C



DETAIL D

MAAG-A-3. Bill of material for school at AP CHIEN LUOC hamlet, BINH LOC district, near CAN THO.

1. 30 pieces x 0.06 x 0.12 x 5.40m
2. 30 pieces x 0.06 x 0.12 x 4.50m
3. 30 pieces x 0.12 x 0.12 x 3.00m
4. 30 pieces x 0.12 x 0.12 x 3.50m
5. 8 pieces x 0.12 x 0.12 x 4.55m
6. 7 pieces x 0.12 x 0.09 x 0.65m
7. 30 pieces x 0.06 x 0.09 x 0.65m
8. 30 pieces x 0.06 x 0.09 x 1.25m
9. 30 pieces x 0.06 x 0.09 x 1.60m
10. 30 pieces x 0.06 x 0.09 x 1.20m
11. 30 pieces x 0.06 x 0.09 x 1.80m
12. 30 pieces x 0.06 x 0.09 x 1.85m
13. 450 Bolts x 0.01 x 0.13 w/nuts & washers
14. 150 Bolts x 0.01 x 0.16 w/nuts & washers
15. 30 pieces x 0.05 x 0.12 x 0.30m
16. 28 pieces x 0.06 x 0.12 x 4.65m
17. 168 pieces x 0.06 x 0.12 x 4.15m
18. 570 sheets roofing Aluminum 0.014" x 26" x 96"
19. 48 pieces x 0.06 x 0.09 x 2.90m
20. 32 pieces x 0.06 x 0.09 x 2.60m
21. 4 pieces x 0.06 x 0.06 x 4.50m
22. 4 pieces x 0.06 x 0.06 x 1.40m
23. 4 pieces x 0.015 x 0.13 x 6.25m
24. 57 meters x 0.70 wide Thin Sheet metal
25. 40 Bolts 0.01 x 0.15 w/nuts & washers

26. 28 olts 0.01 x 0.15

27. 68 pieces 0.005 x 0.05 .. .50 Strap metal

28. 184 pieces x 0.015 x 0.15 < 6.00m

29. 34 pieces x 0.015 x 0.15 . 4.55m

30. 25 kilo nails 0.06m

31. 30 kilo nails 0.08m

2. 14 ea Doors 1.00 x 2.20m

33. 14 pieces < 0.015 x 0.06 x 5.4[illegible]

4. 105 pieces x 0.0 x 0.09 . 0.1 m

5. 35 ilo nails 0.14m

36. 15 kilo nails 0.09m

37. 275 Bags cement

8. 40m^3 San

39. 45m^3 Gravel

0. 84 pieces x 0.0 x 0.09 .60m

1. 56 pieces x 0.0 x 0.09 x ..30

42. 42 pieces x 0.06 x 0.09 x 0.3 .

43. 42 pieces x .06 x 0.09 x . 0m

44. 112 pieces x .15 x 0.15 . . m

4 . 140 pieces x 0. 15 x 0.15 . .50m

46. 140 pieces x .15 x .15 x . m

47. 252 pieces x 0.015 x 0.15 x .0m

48. 40 pieces x 1.015 x 0.15 x .30m

49. 6 pieces x 0. 15 x 0.1 x 8.2m

50. 4 pieces x .06 x 0. 9 x 4. .

51. 28 pieces x .06 x 0.09 . 3.00m

52. 30 kilo nails 0.09m

53. 15 kilo nails 0.06m

54. 126 pieces x 0.04 x 0.04 x 3.25

55. 126 pieces x 0.04 x 0.04 x 2.20m

56. 476 pieces x 0.04 x 0.04 x 1.25m

57. 84 Hinges .06 x .12m

58. 672 Screws .03m

59. 14 Door locks complete w/knobs, strikers plate & screws

60. 5 kilo nails 0.04m

61. 28 pieces x 0.025 x 0.13 x 4.40m

62. 2 pieces x 0.05 x 0.15 x 5.00m

63. 2 pieces x 0.05 x 0.15 x 2.80m

64. 2 pieces x 0.05 x 0.15 x 3.30m

65. 1 piece x 0.05 x 0.15 x 4.30m

66. 25 pieces x 0.05 x 0.10 x 0.70m

67. 5 kilo nails 0.06m

68. 14 pieces x 0.02 x 0.08 x 5.75m

69. 14 pieces x 0.02 x 0.03 x 5.50m

70. 56 pieces x 0.02 x 0.08 x 1.50m

71. 56 pieces x 0.02 x 0.03 x 1.50m

72. 70 meters x 0.03 x 0.08

73. 28 pieces x 0.02 x 0.08 x 6.00m

74. 28 pieces x 0.02 x 0.03 x 6.00m

75. 70 meters x 0.05 x 0.05

76. 8 pieces x 0.02 x 0.08 x 2.70m

77. $35m^3$ Sand

MAAG A-3. Index to numbers on bill of materials for school in AP CHIEN LUOC hamlet near CAN THO.

1. Rafter
2. Lower Chord of Truss
3. Outside Uprights Supports
4. Intermediate Supports
5. Center Uprights
6. Intermediate Center Upright
7. Truss Stiffners
8. Truss Stiffners
9. Truss Stiffners
10. Truss Diagonals
11. Truss Diagonals
12. Truss Diagonals
13. Bolts for Trusses
14. Bolts for Trusses
15. Center scab
16. End Purlins
17. Common Purlins
18. Roofing
19. Partition & End Studs
20. Partition & End Studs
21. Siding Nailers, End Truss
22. Siding Nailers, End Truss
23. End Flashing
24. Cap, Roof Flashing
25. Truss Anchor (Bolts)
26. Truss Anchor (Bolts)
27. Truss Anchor
28. End & Part. Siding
29. End Siding Top
30. For Siding
31. For Roofing
32. Doors
33. Door Stops
34. Purlin Blocks
35. For Purlin Blocks
36. For End Studs
37. For Concrete
38. For Concrete
39. For Concrete
40. Side Studs & Frames
41. Side Studs & Frames
42. Side Studs & Frames
43. Side Studs & Frames
44. Siding
45. Siding
46. Siding
47. Siding
48. Siding

49. Siding
50. Side Studs
51. Side Studs
52. For Studs & Frames
53. For Siding
54. Windows
55. Windows
56. Windows
57. For Doors
58. For Door Hinges
59. For Doors
60. For Windows
61. Truss Braces
62. Truss Jig Material
63. Truss Jig Material
64. Truss Jig Material
65. Truss Jig Material
66. Truss Jig Material
67. Truss Jig Material
68. Form Lumber
69. For Forms
70. Door Trim
71. Door Trim
72. Window Trim
73. Window Trim
74. Form Lumber
75. Window Trim
76. Window Trim
77. Form Stakes
78. Corner Trim
79. Concrete Cushion

SF-1-1. Tactical bridge, 10 meters, class 20, 3 span, west of POLEI KRONG, an outpost near KONTUM. Construction is of native timber hewn from the surrounding hillsides. Strike force personnel, mostly Montagnards in this area, are resupplied across this route, while they are engaged in combat patrol operations west of the outpost. Natives utilize this bridge on their way to and from their hillside dry rice fields. The sergeant in charge received his instruction on a Wednesday morning that this bridge and another (SF-1-2) must be in place for an operation scheduled for the following Sunday morning. Strike force personnel chopped down the trees and erected both structures using semi-primitive tools. The bridges were completed late Saturday afternoon in time for the operation.

Cost data: No ECAD funds used.

SF-1-1. Mid view of the bridge with Sergeant Kuhn of the 539th ECAD pointing out details of construction. Dry rice field can be seen in the background.

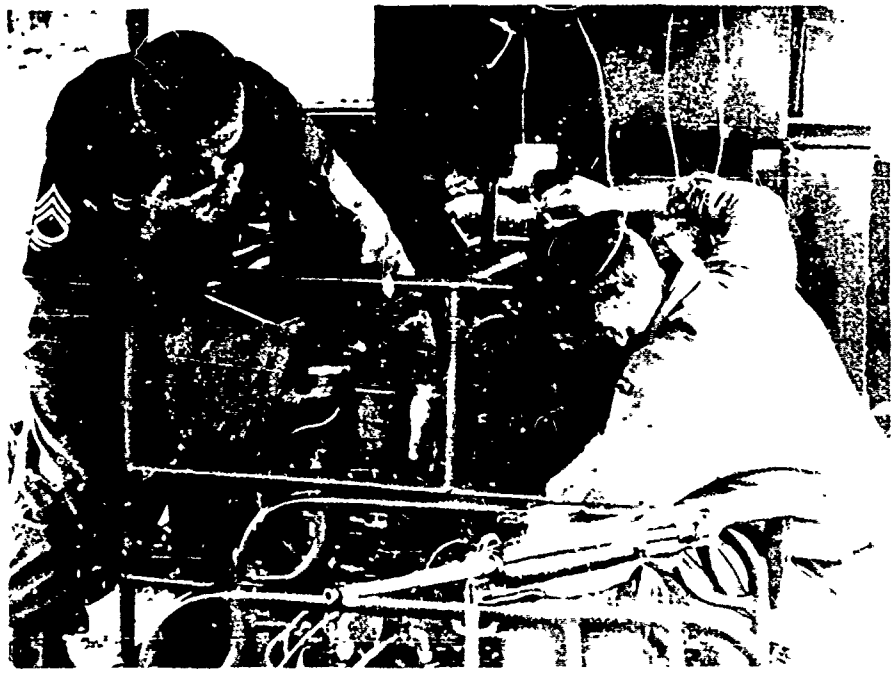
SF-1-1. Detail of notched cap and pile. The individual in charge had been called away to KONTUM at the time the Montagnard unskilled soldier laborers reverted to local customs of construction. Nearly all resistance to shear in the cap has been removed. Yet, the evaluator was assured that several fully loaded 2½-ton trucks have crossed the span safely. Note the barbed wire used to secure the curbing to the cap.

SF-1-2. Tactical bridge, 4 meters long, single span, class 20. Construction is of local material hewn from the adjacent jungle. This structure is used in support of clear and hold operations and is located approximately 7 kilometers west of POLIE KRONG. Old Montagnard woman tossed away a native cheroot in favor of an American cigarette offered by photographer. Debris on deck indicates mountain stream had overflown its banks, with no damage to the bridge. Twelve-inch log stringers are placed on approximately 20-inch centers.

Cost data: No ECAD funds used.

SF-1-3. Rewiring special forces A detachment camp in POLEI,KRONG. With few exceptions, wiring in these remotely located detachments has been accomplished by inexperienced personnel using such expedients as WWII communications wire. Excessive voltage drop and fire hazards are the obvious consequence. An ECAD equipment maintenance sergeant supervised the rewiring of this camp to improve electrical efficiency and reduce fire hazards.

Cost data: Funded by special forces detachment.



SF-1-4. Repair of 6 generators in the A detachment camp at POLEI KRONG. The ECAD equipment maintenance supervisor is pointing out to the special forces detachment communications sergeant where the trouble lies in this overworked generator. The ECAD sergeant "scrounged" the parts necessary to repair these 6 generators.

Cost data: None.

SF-1-5. Repair of generators and training of generator operators in 10 special forces detachment camps in II Corps area. After Sergeant Zebrea had repaired the 6 generators at POLEI KRONG, it was decided that he could profitably be placed full time on this type of work. Here he is shown instructing the Vietnamese generator operator at the PLEIKU detachment. Sergeant Zebrea developed a maintenance record system that could be used to support the ordering of repair parts. However, as it turned out, he was forced to "scrounge" repair parts from other US and Vietnamese military units throughout Vietnam. In addition to generators, the sergeant repaired pumps and other items of engineer and automotive equipment.

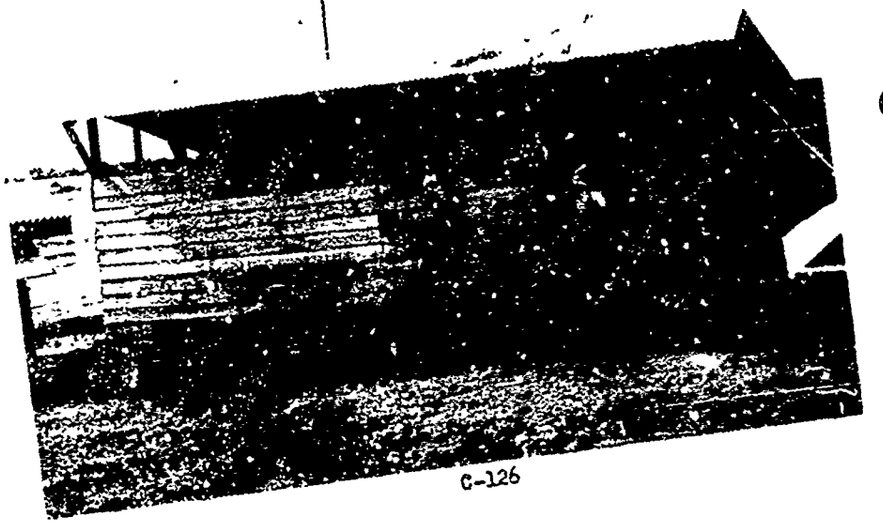
Cost data: None.

SF-1-5. Sergeant Zebrea is shown demonstrating the proper way to replace a magneto to Sergeant Martin, communications supervisor in the A detachment camp at GIA VUC. Generators are located in a cut and cover shelter. Note adaption for chargine US military and strike force vehicle and radio batteries. Sergeant Zebrea performed this direct current modification in generator back to the special forces logistics support unit, the plane in which Sergeant Zebrea was riding crashed into a mountain side. The pilot was killed, but the co-pilot and passengers all survived. In his travels among A detachment camps, Sergeant Zebrea encountered VC small arms fire on several occasions.

SF-1-6. Special Forces B detachment camp at PLEIKU, Vietnam, consisting of 9 buildings. The chief of the advisory team was designated contracting officer's representative for this project. Engineering drawings for the 9 standard type structures included were prepared by the US Army Support Group, Vietnam (USASGV). The USASGV contract with a Vietnamese contractor from PLEIKU was in the amount of $20,700. The advisory team chief, on receipt of the plans and specifications, recognized that the work did not include a water tank, hot water system, plumbing fixtures, concrete floor for the communications shop, exterior walls for ammunition, generator sheds, and all-weather road surfacing. The estimate to complete the project is $2600. All work on the original contract has been completed. The Contractor procured his construction materials locally, except for metal products. Pipe and sheet metal were shipped from SAIGON. The use of a trained engineer as contracting officer paid dividends on this project. Quality of construction is high, and much better than other military contract construction projects in the PLEIKU area.

Cost data: Funded by US Army Special Forces, Vietnam.

SF-1-6. Above is the standard shell used to house office space, barracks, mess hall, and kitchen. Note tower without water tank installed. The road was surfaced with crushed stone, handplaced, then compacted with a 10-ton roller furnished by the contractor. Below is shown the standard shed for shower and latrine facilities.



SF-1-6. Special forces B detachment camp under construction. The site is located on a slope of approximately 4 percent, which required the contractor to perform a substantial amount of grading. This was done entirely by hand. The contractor operated his own saw mill and rock crusher. Concrete for slabs and sidewalks was machine mixed and placed in accordance with US construction standards, under supervision of members of the ECAD advisory team. The contractor furnished plastic sheet material to protect concrete floor slabs during curing from the local daily rainshowers. Photo above shows contract personnel removing excess soil after an area had been graded for a concrete slab.

SF-1-7. Concrete slab for market place at KONTUM. This slab would be occupied by fish vendors, whose wares are now cleaned and sold above a poorly drained earthen floor. Plans for this project were prepared by the public works office in KONTUM, and called for a 100X40-foot X 5-inch slab, with provisions for drainage and footers for later erection of a modern structure. The advisory team chief suggested alterations in design of the slab to improve drainage and ease of pouring. In developing plans for accomplishment of this project, it was proposed that the public works office would provide the labor and construction supervision, USOM would provide the cement, and the advisory team would fund the aggregate and lumber for forms. The ECAD portion of this worthwhile project had to be abandoned, since fund requirements far exceeded the imposed authority of $250 per item per project. It is understood that USOM has agreed to furnish the necessary funds for completion of the fish-monger section of the KONTUM market.

SF-1-8 and SF-1-9. These projects called for digging wells at 14 strike force camps and strategic hamlets located in two separated areas of II Corps. The well drilling rig to have been used is the same type as shown on the next page. USOM, to which these rigs belong, was unable to provide them in this case, and the project had to be abandoned.

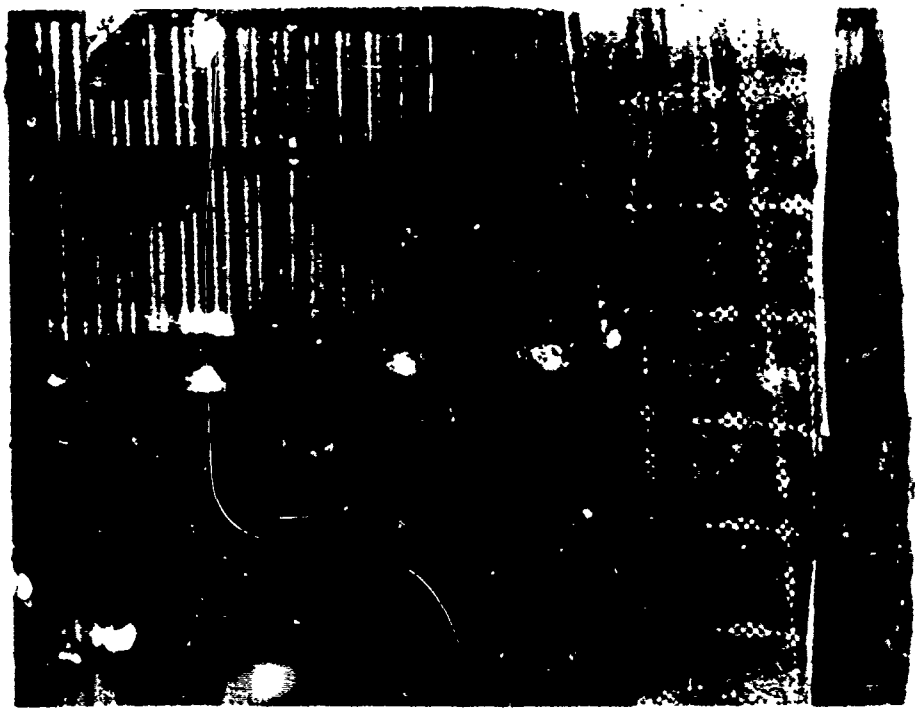
SF-1-10. Rehabilitation of 24 kilometers of road. This project is part of a classified clear-and-hold operation, which was been initiated in the II Corps area. Advisory team reconnaissance indicated a requirement to construct six bridges from 10 to 20 meters in length and about 20 culverts. The VC have destroyed or removed all drainage structures along this road. The road has not been used since before the French departure from Vietnam, and is overgrown with jungle for most of its length. The commanding officer of special forces Vietnam, requested and received approval for retention of the advisory team for an additional 30 days to supervise this clear-and-hold and other projects. Work is being accomplished by indigenous civilian labor and one of two US Navy STAT teams on TDY in Vietnam. STAT teams are composed of 16 Seabee highly trained technicians, capable of performing most construction tasks with minimum local assistance. STAT team equipment includes a dozer, grader, earth auger, power saw, air compressor, welding equipment, and several specialized types of tool kits.

Cost data: To be funded by special forces A detachment.

SF-1-11. Water well at LONG THANH. The well drilling rig, shown above, was provided by USOM. Drilling operation were supervised by a member of an RCAD advisory team. Strike force personnel provided labor. Vietnamese personnel, trained on this project are capable of operating the rig in digging future wells. At right, is shown the capped well head. Pipe was driven to 80 feet. Fresh water will be used in a dependent housing area under construction nearby, after installation of a concrete slab and hand pump.

Cost data: None

SF-1-12. Guard tower at special forces detachment facilities, PLEI DO LIM. Other facilities were constructed on this project for bathing, dispensing POL, and ammunition storage. This new A detachment camp is still under construction. It is occupied by US special forces and Vietnamese strike force personnel. Several new hamlets, occupied by Montagnards, are also under construction in the immediate vicinity of this fortified camp.



SF-1-12. Details of interior of shower room complete with plumbing facilities for washing and bathing, in the A detachment camp at PLEI DO LIM.

SF-1-12. The PLEI DO LI detachment commander, Captain Dorf, is shown standing in front of the POL dispensing rack constructed by native strike force soldiers, using native rials, under supervision of personnel from an ECAD advisory team. This and the shower facility, shown to the left rear, are 2 of 4 structures erected in this remote camp under the supervision of ECAD personnel

SF-1-13. Supervise contract construction of billet, storage, and office buildings for US and Vietnamese personnel in the special forces camp at PLEI DO LIM. Semi-permanent buildings will replace the tentage currently occupied. Construction will be based on engineering design drawings prepared by the control team of the 539th ECAD. Special forces headquarters will fund and let the contract for this project in the near future. This is one of the projects to be supervised by special forces ECAD personnel after termination of the test.

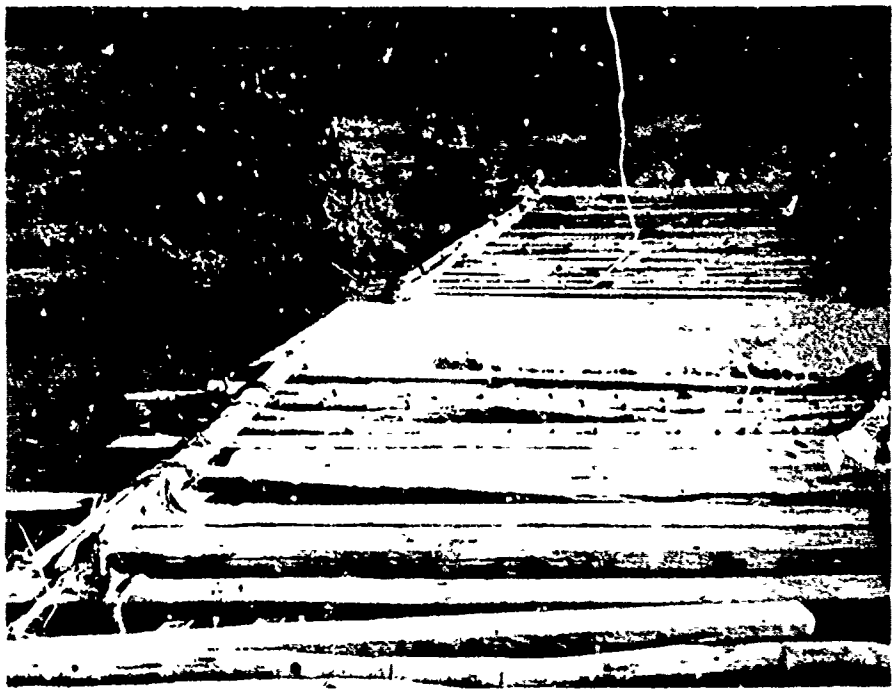
Cost data: To be funded by US Army Special Forces, Vietnam.

SF-1-14. Construction of a 15-meter, class 20 bridge. Materials for bents will be native timber. Superstructure will be constructed of milled lumber. The advisory team has reconnoitered the site and prepared a sketch of the proposed bridge design. This project will be completed during the 30-day retention period of special forces ECAD teams.

Cost data: To be funded from A detachment operating funds.

SF-1-15. Replacement of decking and treadway on light vehicular bridge in the vicinity of HA THANH, Vietnam. Material was purchased for this project by the local special forces A detachment, prior to the arrival of advisory team personnel. Lumber used is 1X4 inches. Rail stock curbing is secured to heavy steel stringer by locally fabricated U bolts. Sergeant Kuhn, of the 539th ECAD, in charge of construction, is shown above on the completed bridge. The work force was provided by the local strike force unit. Bridge is located on road between HA THANH and BA GIA.

Cost data: Funded by special forces A detachment.



SF-1-15. Details of former decking and curbine. Vehicular traffic had ceased using the old bridge, in favor of a ford downstream.

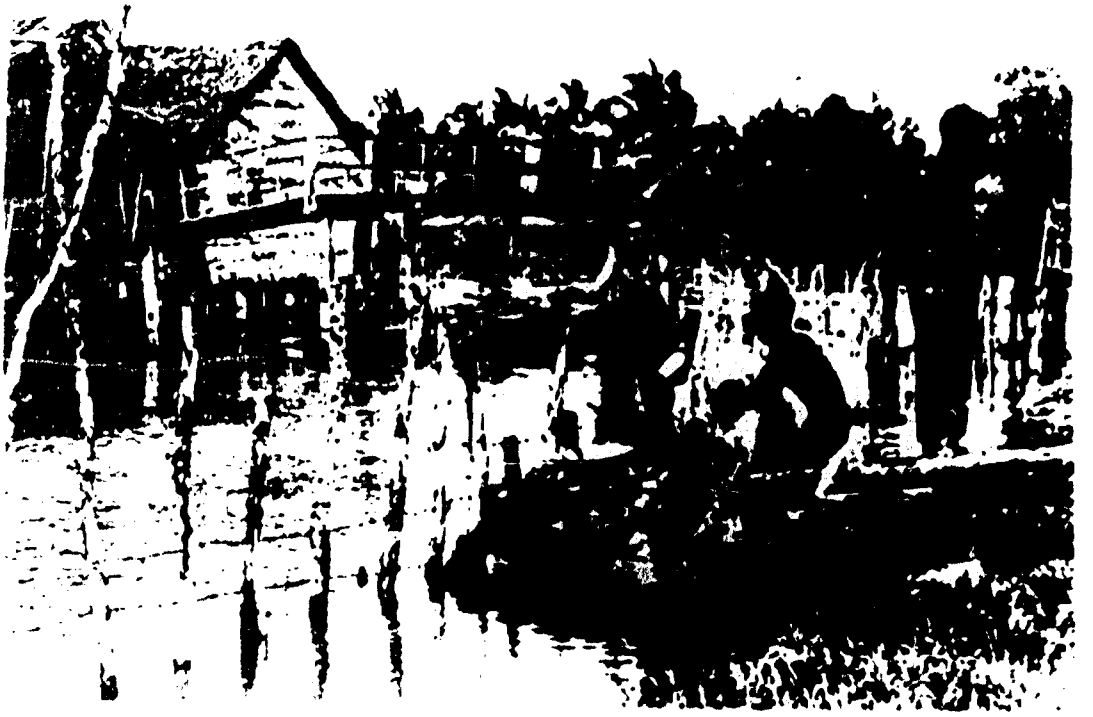
SF-1-15. Detail of heavy steel stringers with bamboo and rotten timber decking removed. With suitable decking and treadway, it appears that this span might support a class 100 load. However, no such heavy traffic is expected to cross the span for some time to come.

SF-2-1. Footbridge design and construction at LONG PHU, Vietnam. All that remains of former unsatisfactory structure are 4 concrete piles. The SCAD team supervised the pouring of concrete abutments and construction of the superstructure. Volunteer labor did the work.

Cost data:		
	Materials	$105.00
	Labor	None
	Total	$105.00

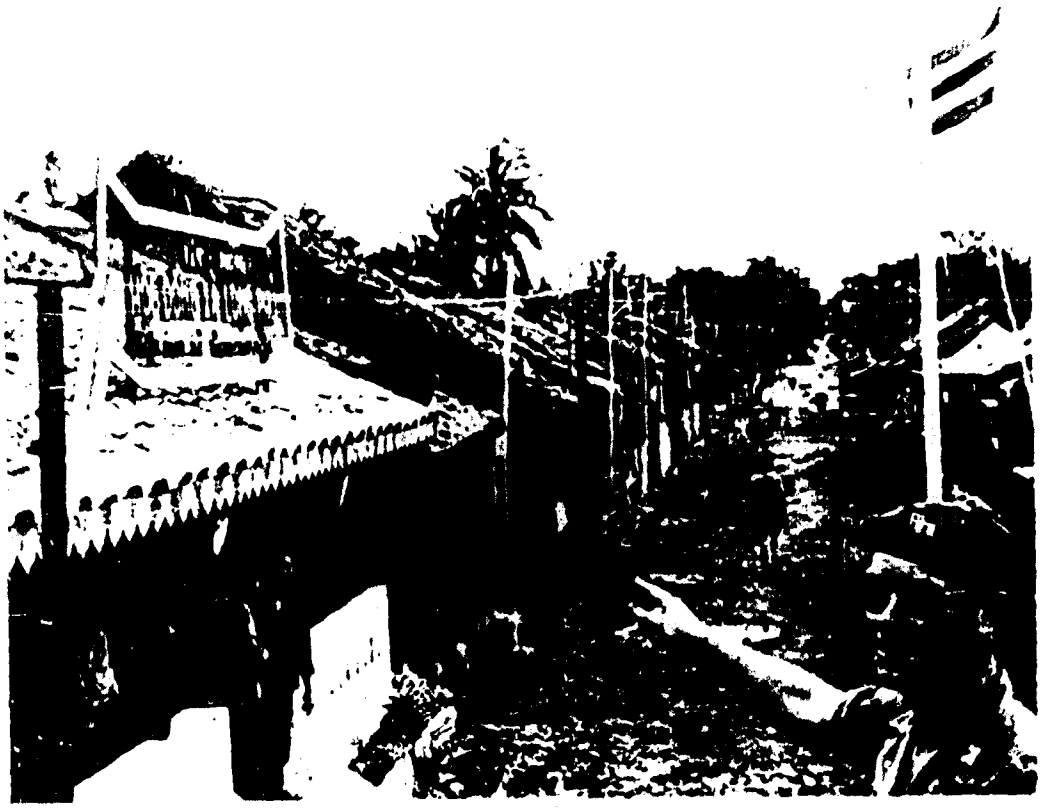
SF-2-2. Construction of pier, LONG PHU startegic hamlet. Advisory team designed and supervised construction of small "T" shaped pier. The facility is located at the end of one of the main streets of the village and serves water-borne traffic. All transportation in the area is by sampan or canal boat, similar to the type shown in the photo above. Villagers furnished the labor at no cost.

cost data:		
	Materials	$150.00
	Labor	None
	Total	$150.00



SF-2-3. Sideview of footbridge, 120 feet long in LONG PHU. Piers remain from a former bridge. ECAD team designed and supervised construction of the remainder of structure. Superstructure is lumber. Concrete footers and wingwalls were provided. The flag pole base, shown at right, was poured as a bonus from cement left over, after the bridge had been completed. All labor was furnished free of charge by the village.

Cost data:	Materials	$145.00
	Labor	None
	Total	$145.00

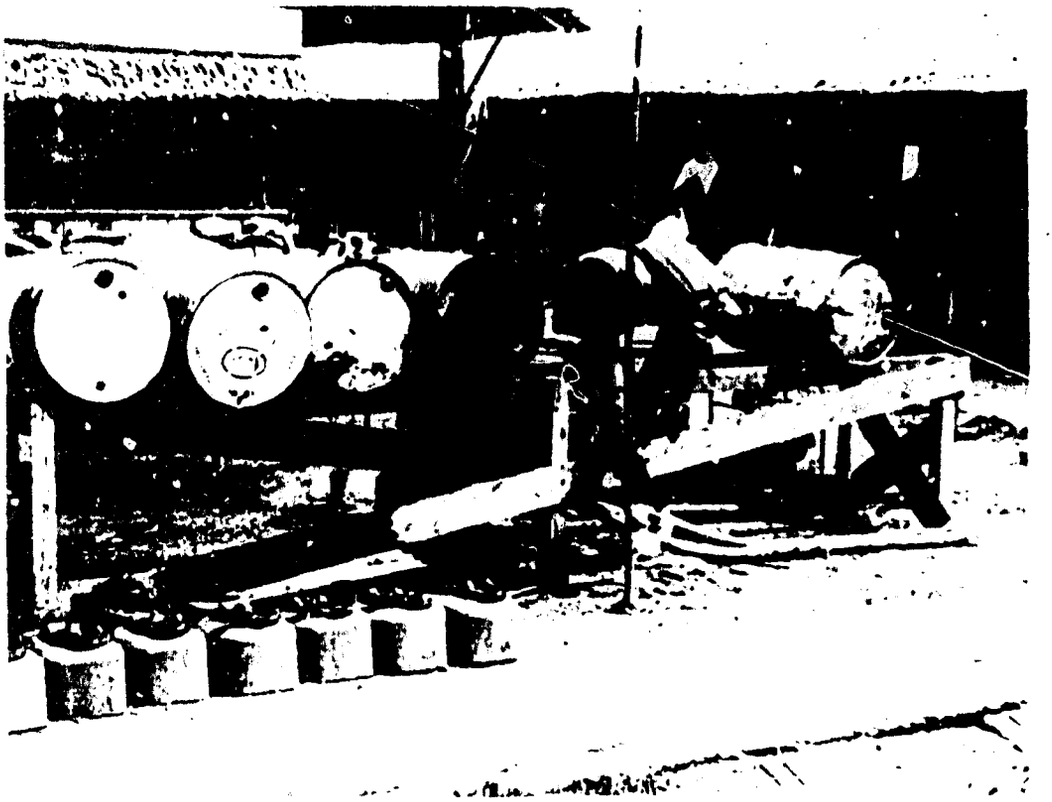


SF-2-4. Streetlights for the hamlet of LONG PHU, Vietnam. Captain Strack is shown pointing toward one of the flourescent fixtures and poles on the left edge of the photo. Above the captain's head, the Vietnamese flag is flying from a pole set in the concrete base, described under project SF-2-3. The building with the white porch to the left is the hamlet council house, where all public business is transacted. The village council, under the leadership of a Vietnamese Catholic priest, Father Tong, furnished the poles, fixtures and wire. A control and junction box was purchased by the advisory team. Only the two main streets of the village are lighted. Power is provided by generators located in the adjacent special forces A detachment camp.

Cost data:		
	Materials	$10.00
	Labor	None
	Total	$10.00

SF-2-5. Boat dock at special forces camp in LONG PHU. Armed helicopter pilot, Lieutenant Burner, is shown standing at the joint of this "L" shaped structure. Plastic storm boats, with 25 horsepower motors, are used by strike force combat patrols to run down VC's along the many canals that lace this area of the Delta. Strike force soldiers constructed the pier, under supervision of advisory team personnel.

Cost data:		
	Materials	$50.00
	Labor	None
	Total	$50.00



SF-2-6. POL dispensing rack at LONG PHU. This rack is located in the special forces strike force camp adjacent to the village. On rare occasions, this camp is resupplied by canal boat. Most cargo is delivered by helicopter. Construction supplies used on the military and civic action projects in LONG PHU were brought in from CAN THO by helicopter. Strike force labor erected the POL rack under supervision of the advisory team.

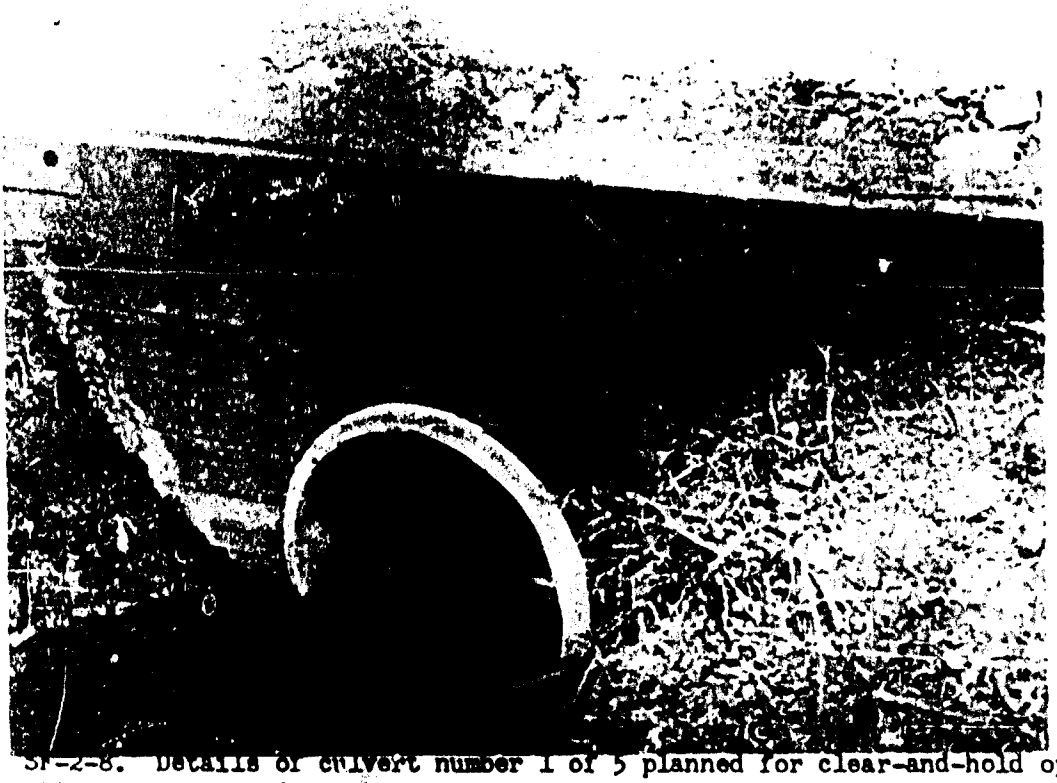
Cost data:		
	Material	$25.00
	Labor	None
	Total	$25.00

SF-2-7. Newly-surfaced village streets, LONG PHU. When 2 members of the advisory team arrived to work in LONG PHU in mid-June, village walks were little more than quagmires. 25 cubic meters were dug out of a clay pit in the area in chunks and laid out on a higher piece of ground to dry in the sun. The dried "bricks" were carted to the village for street surfacing. Although the high crowned surface gets a little slippery in wet weather, the project successfully elevated pedestrians out of the mud. All labor was on a volunteer basis. When an evaluation team member first inspected projects in this village, the general atmosphere was pretty dismal. The only ray of sunshine came from a smile on the village priest's face. The special forces A detachment was busy organizing a strike force unit. On a subsequent evaluation team visit in late August 1963, it was found that the organized strike force of approximately 300 soldiers had made its impression on the economy of the village. Stores and the village council hall were bustling with activity.

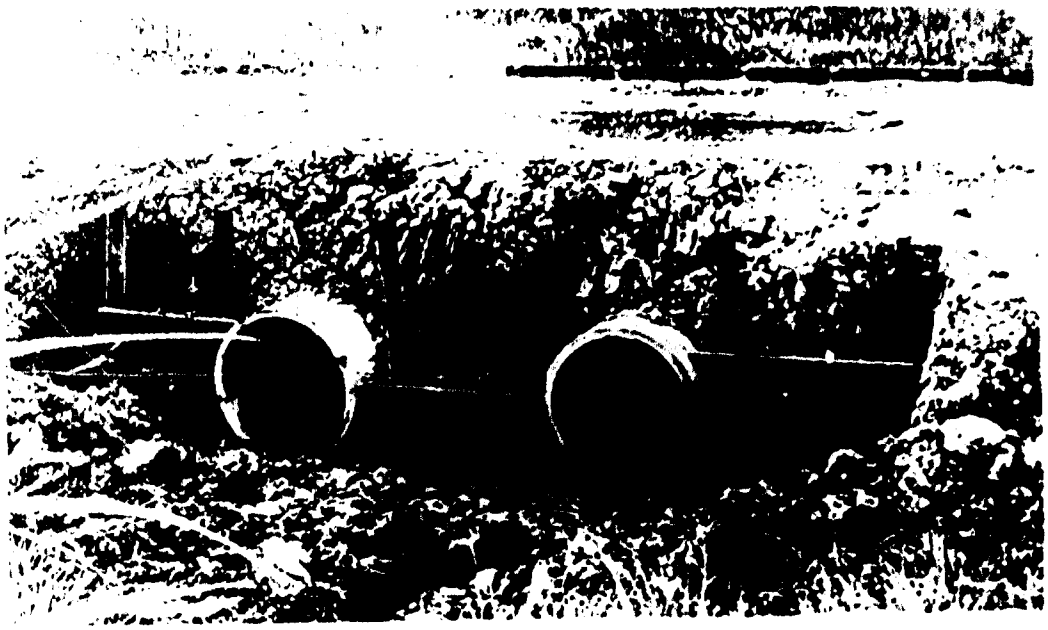
Cost data: No funds expended.

SF-2-8. Road leading from the fortified strategic hamlet of THO SON, west toward the "3-mountains" area. Project was to construct drainage structures and 600 meters of corduroy surface on 12 kilometers of road as part of a planned clear-and-hold operation. THO SON is the last friendly village on the road that goes northwest from RACH GIA to HA TIEN. It is located about 20 kilometers from the city of RACH GIA. The 3 mountains, from which the area gets its name, rise abruptly from abandoned Delta rice paddies. The most distant of these mountains, on the left, rests on the sea of SIAM, and is reputed to accommodate a VC depot and reoutfitting activity. All 3 mountains contain tunnels, from which clay is mined for terra cotta type potteryware, manufactured in the local area. Some of the clay is transported by sampans down the canal, shown on the right, to THO SON, where it is transferred to larger sampans operating on the RACH GIA-HA-TIEN canal. Detailed reconnaissance by Sergeant Donahue, of special forces ECAD advisory team number 2, indicated that 5 culverts would be required. Labor on this project was provided by the village of THO SON.

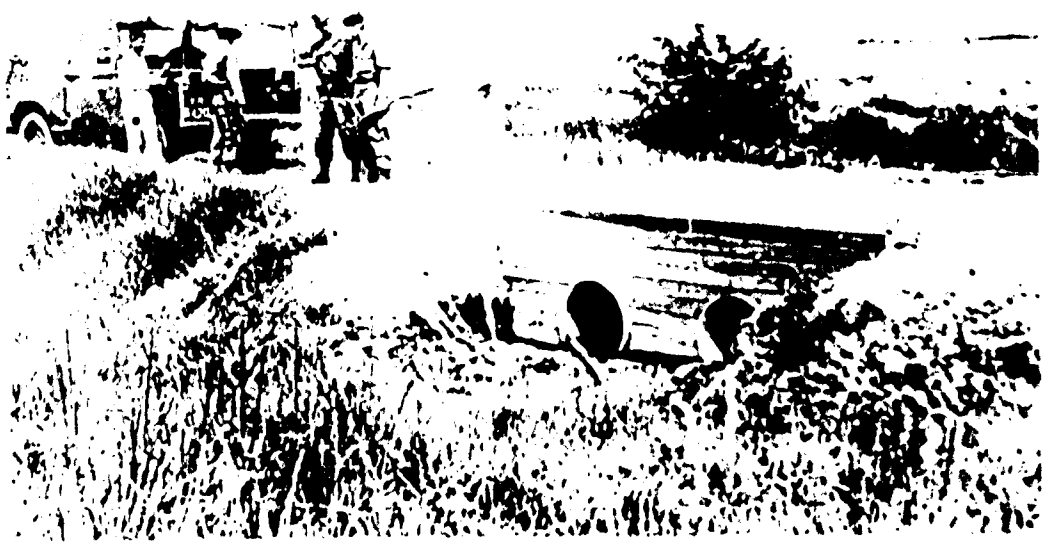
Cost data:		
	Materials	$325.00
	Labor	None
	Total	$325.00



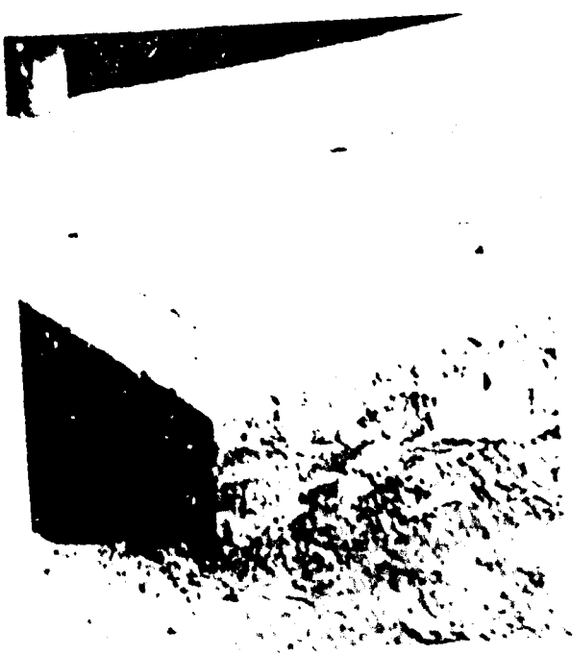
SF-2-8. Details of culvert number 1 of 5 planned for clear-and-hold operation. Sergeant donahue supervised civilian laborers working on both the corduroy surfacing and the drainage structures. He had obtained a 2½-ton truck from the special forces A detachment in HA TIEN for carrying supplies and transportation between work details. The corduroy surfacing portion of the project was at the south base of the middle of the furthest mountains. This worksite received intermittent VC fire, but was completed satisfactorily. As work progressed on the project, VC action was intensified. One night, the VC rounded up villagers from 1 of the 2 friendly villages located at the foot of the first 2 mountains. Using friendly villagers, the VC supervised the destruction of most of the concrete pipe that had been pre-positioned at 3 of the 5 culvert sites. During this operation, the VC told friendly civilians that they were planning to kill Sergeant Donahue. This information came to the attention of the MAAG Sector Advisor at RACH GIA, and he ordered Sergeant Donahue to return from the village of THO SON, where he had been living, back to the safety of the sector advisor's compound, for a couple of nights. As a result of the VC action, only 2 of the 5 culverts were installed. Sergeant Donahue returned to the village of THO SON to complete work on the next project described. (SF-2-9)



SF-2-8. Two pipe drainage structure on clear-and-hold operation in the vicinity of THO SAN, RACH GIA province Vietnam. Culvert under construction above; completed, below.



SF-2-9. Raised concrete slab to improve sanitation in market place at THO SON village, Vietnam. Village chief requested this project be undertaken by ECAD advisory team personnel. Completed slab is shown above, and details of construction to the right. Brick, cement, and aggregate were pruchased from ECAD imprest funds. These were transported by sampan from RACH GIA to the project site. Earth fill and labor were funded by the village.



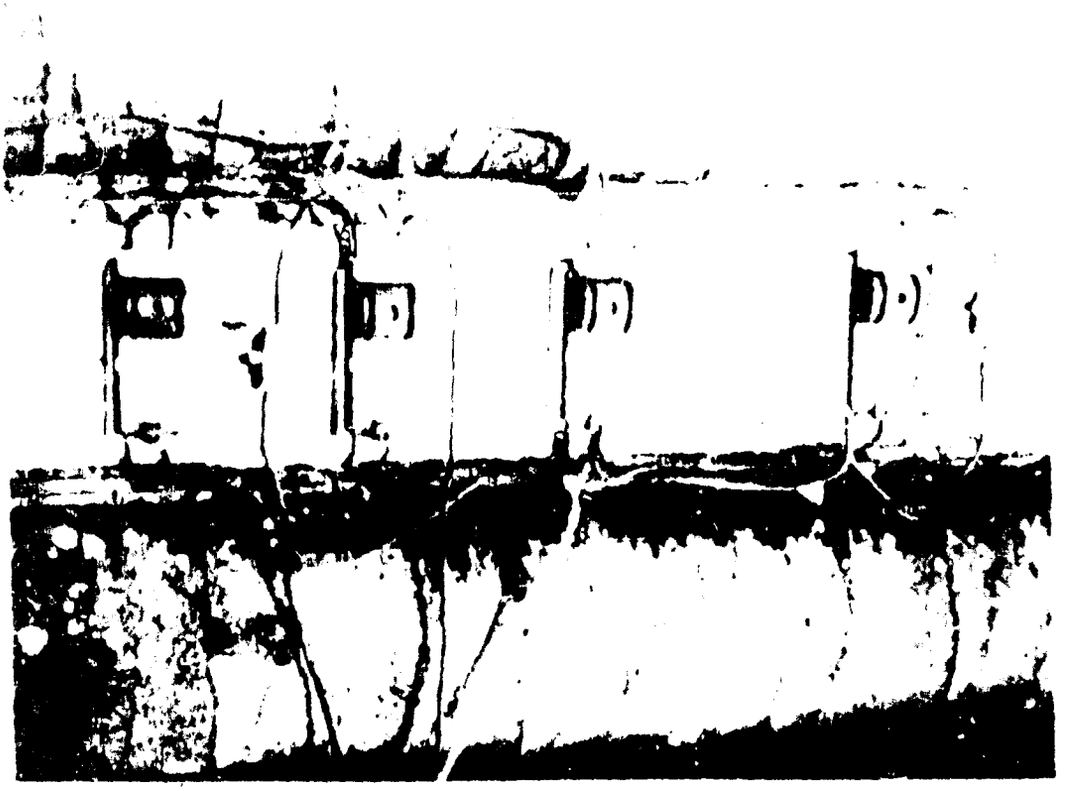
Cost data:

Materials	$340.00
Labor	None
Total	$340.00

SF-2-9. Village youths hand-placing aggregate for base of market place slab. Concrete for the slab was mixed in two mixing vats built especially for the purpose. While supervising this project and a road project nearby (SF-2-8), Sergeant Donahue lived for 50 days with the chief of this frontier hamlet and ate the fare prepared by the chief's wife. The chief provided the sergeant 2 personal bodyguards on a 24 hour basis, as the VC in the area had threatened the sergeant's life. One night a VC patrol was intercepted by hamlet militia near the village where Sergeant Donahue was staying. A radio message announced that this patrol was after the sergeant. The chief of the THO SON hamlet devised a plan, using Sergeant Donahue's truck and his own militia, whereby he could block the retirement route of the VC patrol. Sergeant Donahue drove his 2½-ton truck loaded with hamlet militia on the mission. The truck was forced to stop at a bridge which had been burned the night before by the VC. The sergeant and the militia dismounted and advanced about 100 yards, at which point the group encountered heavy automatic weapon fire from the mountainside above. A hasty retreat was ordered. A Vietnamese militia sergeant and a private were killed in the encounter.

SF-2-10. Project called for drilling several wells in strategic hamlets at HA TIEN located at the base of the mountains that form the boundary between Vietnam and Cambodia in the south. It was anticipated that a USOM well drilling rig, of the type described in other projects in this annex, would be available for the purpose. Unfortunately, however, USOM could not provide the rig for these projects during the test period. It is expected that the local USOM representative will work in the future with provincial or ARVN troops to see these important projects throught to completion.

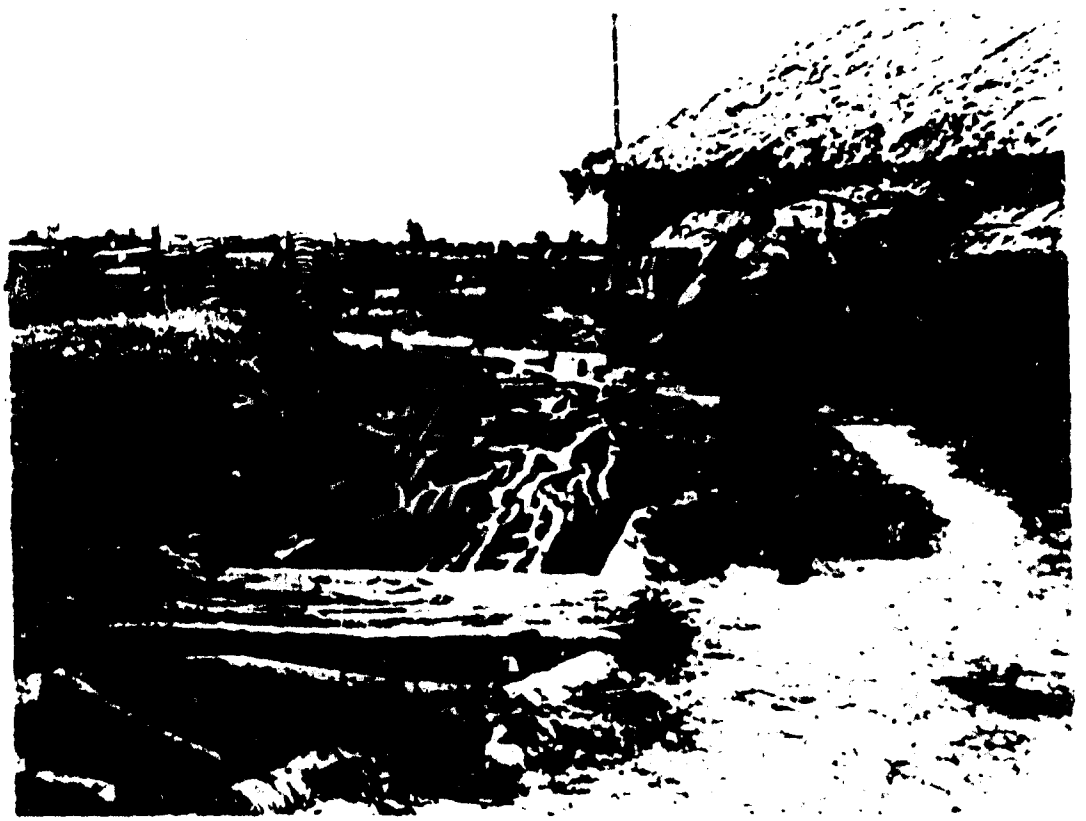
Cost data: None



SF-2-11. Design and install electrical distribution system in special forces A detachment camp at HA TIEN. Shown above, is a battery of switches installed inside the palm log operations bunker at the camp. Switches and wire are of Vietnamese manufacture. Materials were purchased from A detachment operating funds. Work was performed by ECAD advisory team personnel.

Cost data: No ECAD imprest funds expended.

SF-2-11. View of generators furnishing power for electrical distribution system in special forces A detachment camp at PA TIEN. The electrical power source for lighting and other uses is located separately from the power source for communications equipment, a departure from normal procedures found in most A detachment camps visited by ECAD evaluation team personnel.



SF A-2-12. Storm sewer in special forces camp at HA TIEN. The A detachment commander, Captain Dougherty, is shown describing the extent and importance of this project. The sewer drains away waste material from the special forces and adjacent Vietnamese strike force mess halls and kitchen facilities. The original plan called for an earth-covered drainage structure. Timber branches, still in place, were to be used to support an earth cover contained by palm frond matting material. The medical technician of the detachment suggested to Captain Dougherty that he could keep the drainage flowing and chemically treat sewage better if he had unlimited access to the structure. The earth cover was not installed. This drainage ditch is revetted with palm logs. Strike force soldiers worked under the supervision of an ECAD construction sergeant on this project.

Cost data: No ECAD imprest funds expended.

SF-2-13. Special forces A detachment drainage improvement, HA TIEN. Project was initiated by ECAD team member to elevate low, muddy area in northwest portion of camp. Two hundred fifty cubic meters of sand from the beach were hauled in by special forces 2½-ton trucks and spread by strike force soldiers, under supervision of ECAD sergeant. Old gasoline drums shown behind palm tree were used to compact fill. Project is being continued under supervision of special forces personnel.

Cost data: No cost.

SF-2-14. General engineer maintenance support of special forces effort, CAN THO and other special forces camps in IV Corps area. Sergeant Gossom, engineer maintenance specialist, is making a minor adjustment to a small generator.

Cost data: None.

SF-2-14. Sergeant Gossom installing shower head for use by special forces personnel. Numerous small plumbing and heating repairs and installations were accomplished under this project.

SF-2-14. A member of one of the two special forces ECAD advisory teams connects a new electrical line with an existing main line. Tie-in is being made to electric distrubution system installed by a Vietnamese contractor. Note coil, to right of bamboo purlin, carefully wound to prevent having to cut and throw away a short section of excess wire.

SF-2-15. Footbridge, 140 feet long, at TAN PHU. This bridge replaced former swing type structure that had been removed. The stand for the revolving table is shown in the middle of the canal. The original plan was to install a new swing bridge, but there would not have been enough time to procure the necessary missing hardware and complete the task before the end of the ECAD test. Information was obtained on clearance required for the largest canal boat passing under the bridge at high tide, and construction was initiated. The far shore section and center span had been completed, when a sampan that could not pass under the bridge arrived on the scene. The village authorities, who had provided the information on which to base clearance dimensions, had failed to mention a boat of this size. The center span was jacked up and cribbed in 2 hours, and the big sampan got underway with a minimum delay. The near shore portion of the bridge was then redesigned to accommodate the higher elevation of the center span and constructed as shown in the photograph. A skilled carpenter was hired for a portion of this project. The remaining unskilled labor required was provided by the village and the local strike force unit.

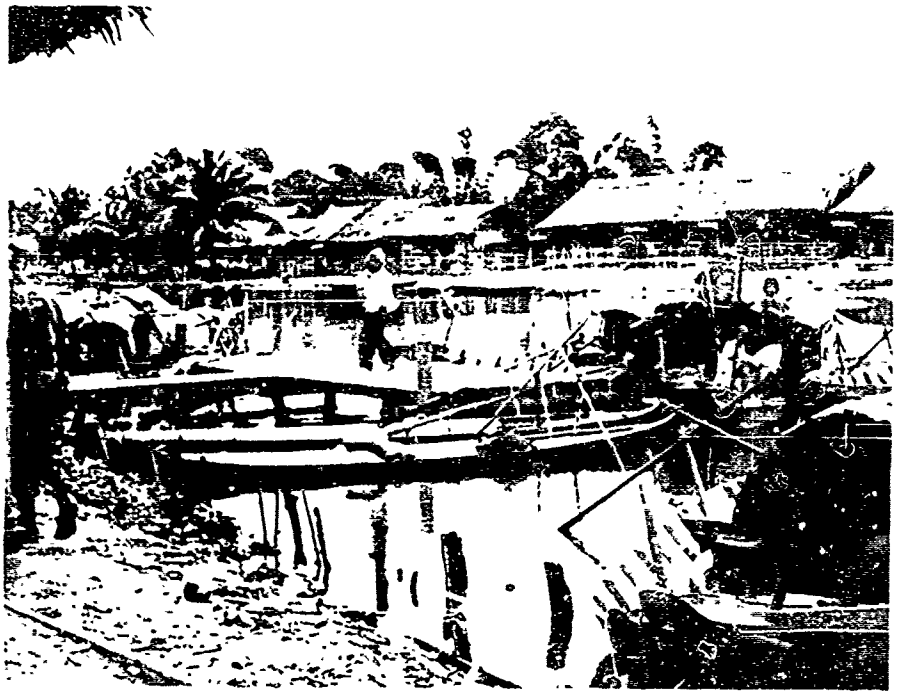
Cost data:

Materials	$441.00
Labor	9.00
Total	$450.00

SF-2-15. Sergeant Blas, in charge of construction of a footbridge at TAN PHU, stands on the completed structure. Note high quality workmanship in handrail and post. Sergeant Blas operated alone on this project, living with the newly established special forces strike force camp in the area. This camp receives harassing VC fire frequently.

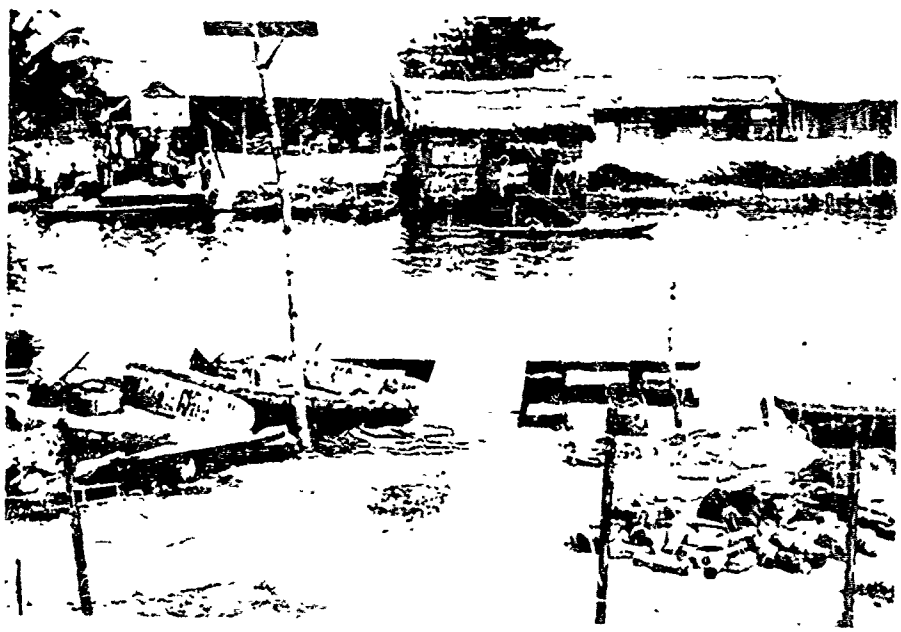
SF-2-16. Concrete pad for market place in TAN PHU where market place building has earthen floor. Project was to elevate floor level and pour a concrete slab to improve sanitary conditions. A delay in arrival of materials forced cancellation of this project. The TAN PHU special forces unit is resupplied entirely by air, either by air-drop or by helicopter. Nearly all of the construction materials used on special forces ECAD projects in the vicinity of remote special forces camps in the Delta area were transported by UH-1B and H-21 helicopters. Aircraft were not always readily available, and many frustrating delays resulted. However, taking into consideration higher priorities for support of combat operations, Army aviation and special forces commanders, who allocated cargo space, did an outstanding job of supporting the ECAD test construction program in the Delta area.

Cost data: None. Purchase of cement cancelled.



SF-2-17. Public pier for the village of TAN PHU. This "T" shaped landing facility was constructed by unskilled village volunteers under the supervision of an EOAD construction supervisor, Sergeant Blas. It is located adjacent to the market place, and local farmers use it to unload wares, brought down the canal in small sampans for resale. This is the busiest spot in town early in the morning.

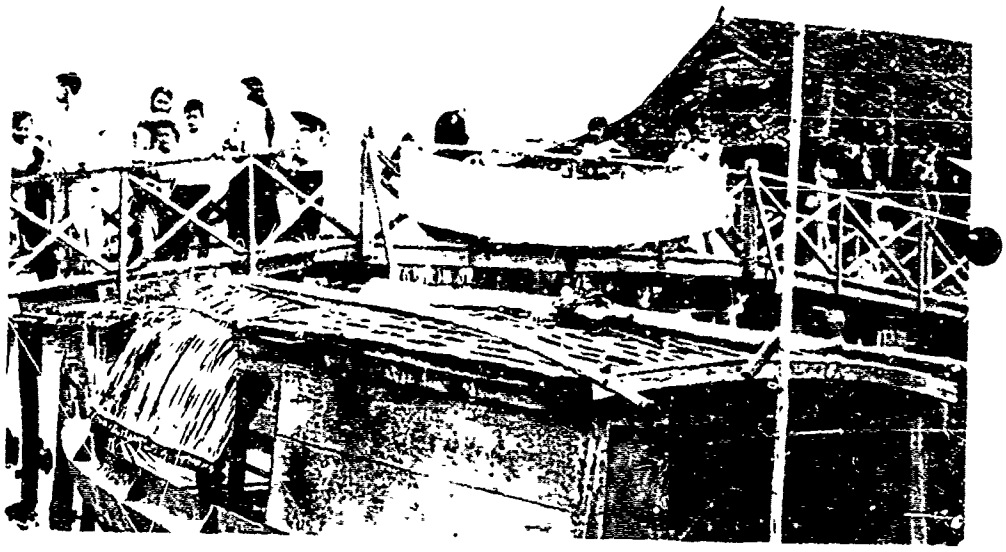
Cost data:		
	Materials	$190.00
	Labor	None
	Total	$190.00



SF-2-18. Pier for special forces camp, TAN PHU, Vietnam. Pier is used to embark and discharge strike force personnel engaged in patrolling canals. Pl tic storm boats used for combat patrols are shown tied up next to this ECAD project. Labor was furnished by the strike force commander.

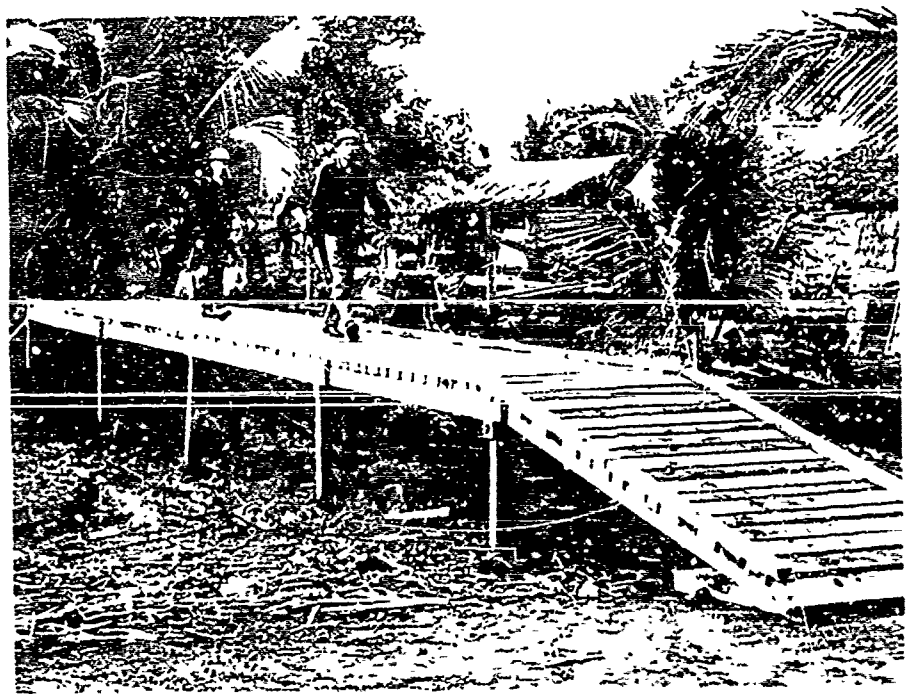
Cost Data:

Materials	$55.00
Labor	None
Total	$55.00



SF-2-19. Footbridge superstructure, TAN PHU. This bridge is 120 feet long and spans a wide canal, separating 2 sections of the hamlet. This is the only crossing means available, and the structure is located on the main street. Labor was furnished by the village. Design is of the same general type as SF-2-15.

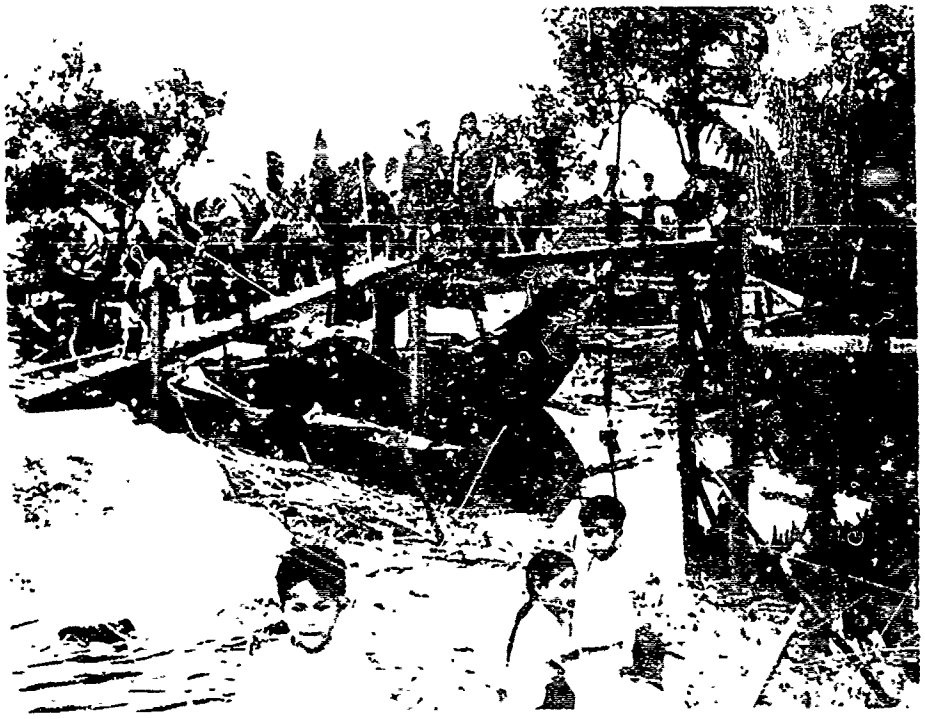
Cost data:		
	Materials	$200.00
	Labor	None
	Total	$200.00



SF-2-20. Footbridge at LONG KHANH. Structure, 48 feet long, crosses ditch that is full of water at high tide, and is a non-negotiable obstacle at low tide. Bridge connects 2 hamlet areas separated by the ditch, and reduces distance required to go from one area to the other by approximately 800 yards. All piles were driven by sledge through gooey, silty material to refusal. Labor was provided by the village, but was difficult to obtain since most young men were planting rice during the time of construction. Some lumber was stolen on this project. Most of the larger sized timbers were recovered but not enough of the smaller ones to erect handrails for the bridge. Fresh cut mahogany is heavier than water, and the thieves hid some of their loot on the bottom of a nearby canal.

Cost data:

Materials	$120.00
Labor	None
Total	$120.00



SF-2-21. Footbridge constructed at LONG KHANH. Bridge is 56 feet long and spans the canal, shown at low tide, which separates 2 sections of the village. This structure reduces walking distance between the 2 sections by 250 yards. Labor was furnished by the hamlet chief and by the local Catholic village priest, Father Dominguez. Each has his own labor force and own separate militia unit. This complication, and the fact that it was rice planting time, made labor difficult to obtain. The sergeant in charge started working on this bridge by himself. He was joined by several children wanting to help. Then a few old men and women volunteered for the labor force. It was a slow moving project, but the bridge was completed.

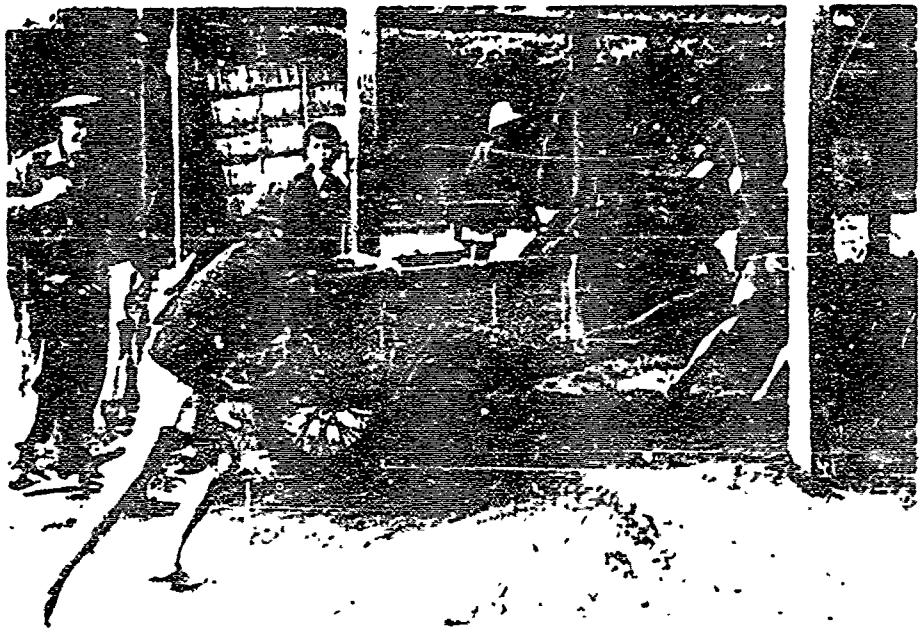
Cost data:		
	Materials	$185.00
	Labor	None
	Total	$185.00

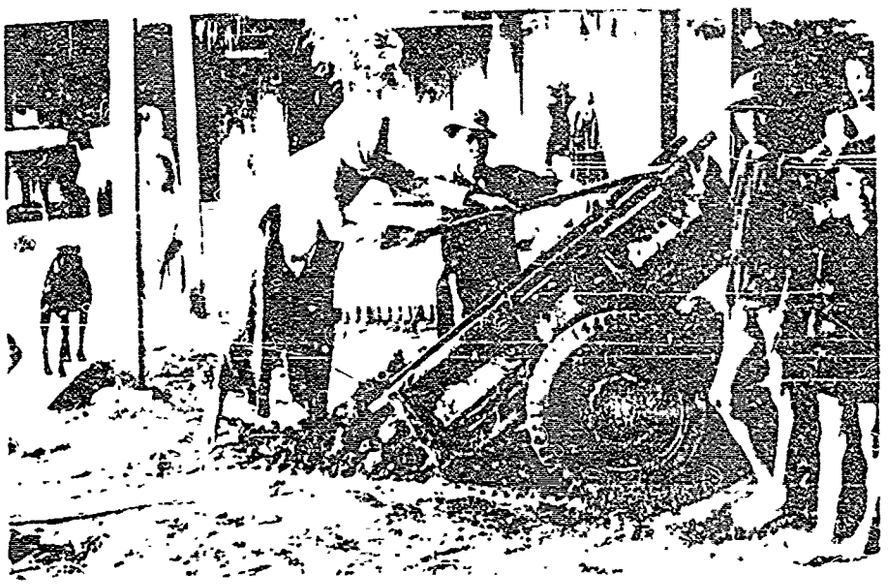
SF-2-21. Sergeant Donahue on footbridge under construction in LONG KHANH. This sergeant supervised unskilled village personnel on 2 bridges and a market place project in the area. During the period of construction, he lived in a newly developed special forces strike force camp. He also was used by the detachment commander to reconnoiter a mined road, to disarm boobytraps, and on other combat engineer support missions.

SF-2-22. Elevated concrete slab for market place, LONG KHANH. Village children wanting their pictures taken, partially block, but do not hide, the completed concrete floor. The floor measures 43 X 27 feet. Sixty percent of the cement used came from USOM. The remaining cement and bricks were funded by the ECAD advisory team. The village furnished aggregate. Volunteer laborers from the village did the work. This project substantially improved sanitation in the market place. The photograph was taken during afternoon siesta. All the business of the day has been completed, and truck farmers, butchers, fishermen, and bakers have cleared away their wares and returned to their homes.

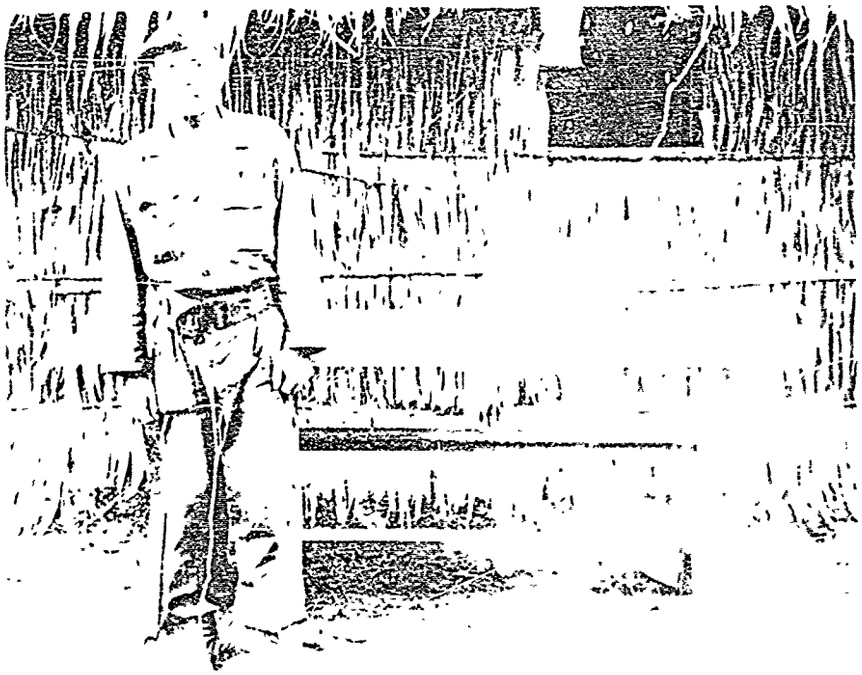
Cost data:		
	Materials	$95.00
	Labor	None
	Total	$95.00

SF-2-22. Above, villagers obtain fill for LONG KHA'H market place from wasteland approximately 1 mile from the construction site. Below, Sergeant Donahue giving instructions as to where he wants the fill material placed.





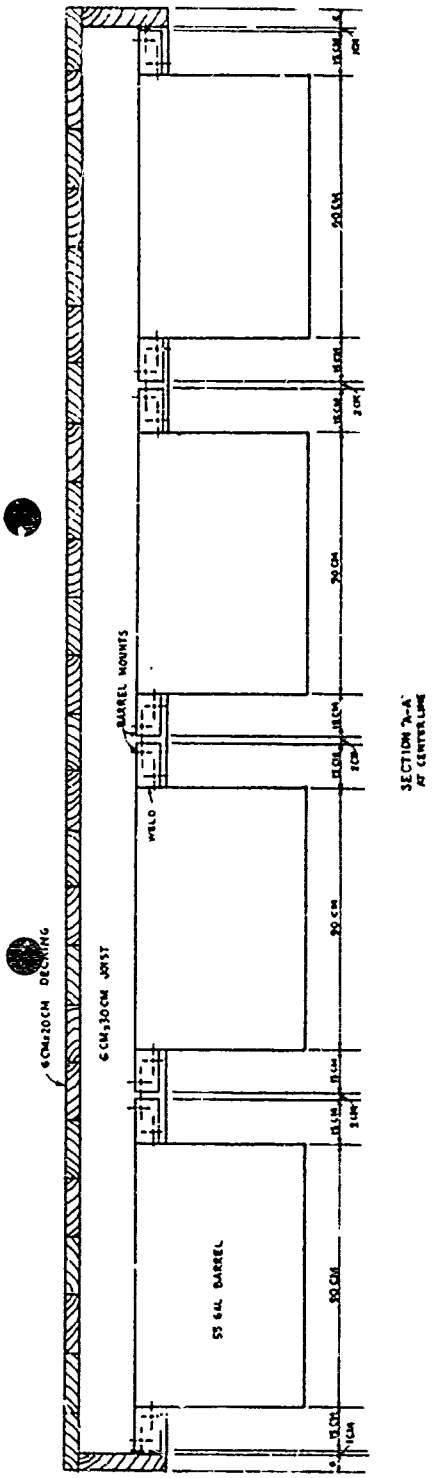
SF-2-22. Above, old woman clearing hand cart of fill. Below, details of compacted fill, LONG KHANH market place, ready to receive 4-inch crowned concrete pad.



SF-2-23. Engineer support of special forces A detachment camp, LONG KHANH. Sergeant Rundquist, engineer maintenance supervisor of the advisory team is shown with 1 of 6 tables he constructed for the special forces mess hall. He worked on several such tasks, and supervised the cistern project shown on the next page. ECAD equipment maintenance personnel, in addition to repairing vehicles, generators, refrigerators, etc., supervised or assisted in the supervision of major and minor construction tasks during the test program. They were also used as imprest fund clerks by most teams.

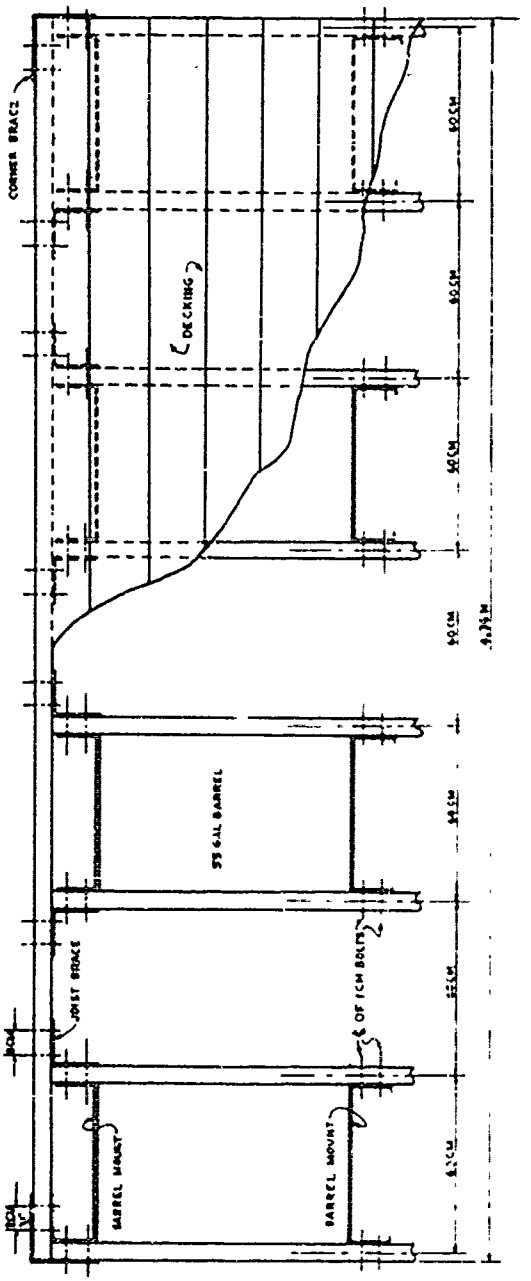
Cost data:		
	Materials	$20.00
	Labor	None
	Total	$20.00

SF-2-23. Strike force soldier putting finishing touches to grading around brick lined cistern in special forces A detachment camp, LONG KHANH. Cistern is approximately 10 feet deep and is for reserve storage of unprocessed fresh water.



Project SF-A-1. Design of 3X5-meter bathing float for public beach at NHA TRANG. Part of the design drawings are shown here. The float will be constructed by special forcers personnel. Project was for design only.

Cost data: None



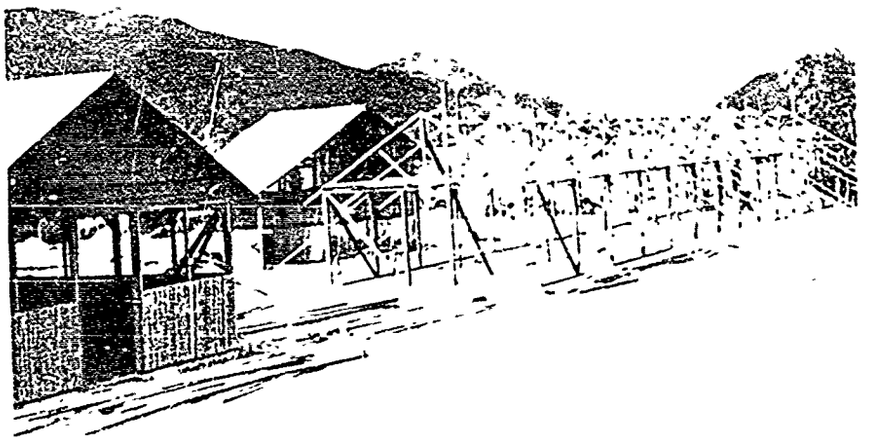
MATERIAL 3X5M FLOAT

NAME	SIZE	QUANTITY
Joist	6CM x 30CM x 5M	8EA
Stringer	6CM x 30CM - 4.5M	2EA
Decking	6CM x 20CM x 4.5M	25EA
Barrel	55 Gallon	16EA
Barrel Mount	½CM x 8CM x 84CM	32EA
Joist Brace	½CM x 8CM x 32CM	12EA
Corner Brace	½CM x 8CM x 44CM	4EA
Anchor Bracket	½CM x 14CM x 106CM	2EA
Bolt	1CM x 10CM	160EA
Washer	3/10CM x 4CM Diameter	320EA
Nail	40d	50Lbs
Reinforcing Bar	1.5CM x 22M	
Concrete Anchor	40CM x 60CM x 60CM	2EA
Wood Screw	No. 14 x 5CM	32EA
Steel Cable	1.2CM x 40M	

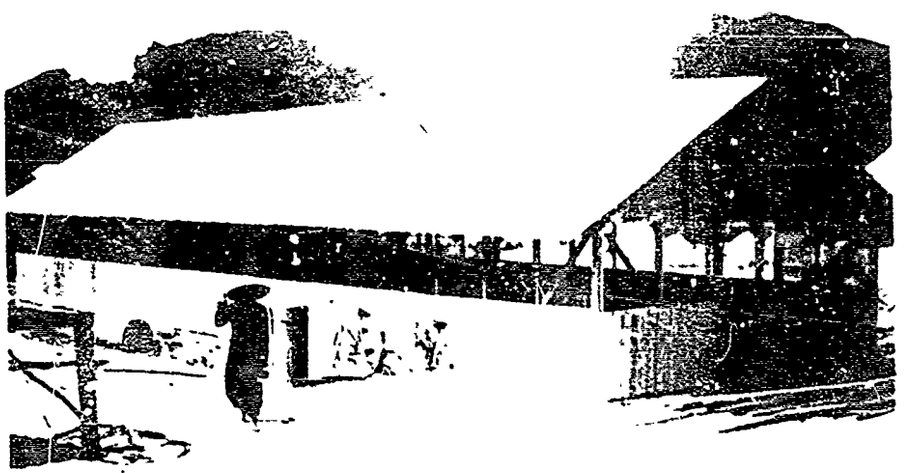
SF-A-2. Vietnamese strike force camp constructed at NHA TRANG. Capacity - 100 men. This project was designed in its entirety by the control team of the 539th ECAD. Camp consists of a mess hall, office and supply building, 5 barracks, and a latrine. All major structures are of light frame construction, with insect screen above a woven bamboo wainscoating, corregated asbestos roofing, and 4-inch concrete floors. The latrine has a palm thatched roof and laterite floor. Project was accomplished under two contracts totaling $7800. Construction was supervised by various members of the control team. Two additional contracts will be required to complete the camp; one in the amount of $590 for wiring, and the other for $590 to provide wooden platforms for sleeping.

Cost data: Funded and contract let by US Army Special Forces, Vietnam.

SF-A-2. Vietnamese strike force camp under construction. Shown above are three of the five barracks included in the contract. Note woven barbed wire fence and concrete posts.



SF-A-2. Strike force camp mess hall under construction showing typical roof truss and wall framing. The camp headquarters is shown to the left, and a temporary contractor's shack at the rear.



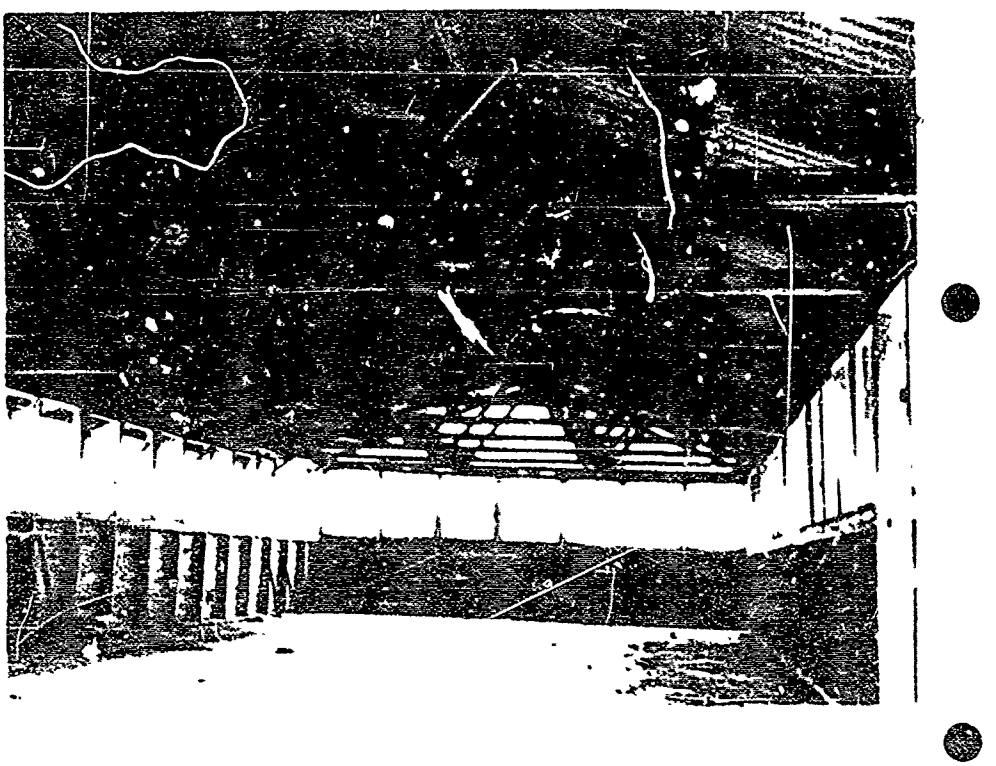
SF-A-2. Headquarters building of the strike force camp. Note details of corregated asbestos roofing, woven bamboo wainscoating, and insect screening. Two rolls of wainscoating are shown on the ground behind the woman.

SF-A-3. B detachment special forces camp at DHA NANG. Camp consists of 8 buildings, including headquarters offices, BEQ, BOQ, combination dayroom and mess hall, supply room, maintenance shop, shower, and latrine. All main structures are timber framed, with corregated asbestos roofing. Living and office spaces have 4-inch concrete floors, poured monolithically with a continuous 6-inch footer around the outside edges. Standard drawing prepared by U.S. Army Support Group, Vietnam (USASGV) governed construction. USASGV also let the contract for $23,000. The utilities officer of the ECAD control team was designated contracting officer's representative on orders. A second contract in the amount of $1150 has been let to install 6 antennae masts, water pumps, grease rack, electric hot-water heater for the kitchen, vapor type burner for hot water in the showers, and wash stands and plumbing fixtures in the latrine.

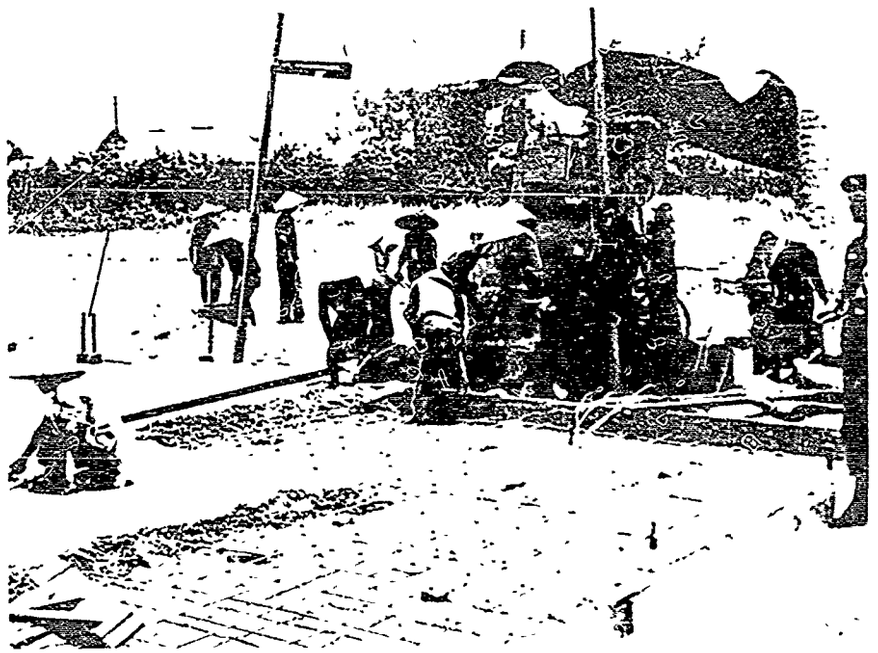
Cost data: Funded by U.S. Army Special Forces, Vietnam.

SF-A-3. Partially completed headquarters building in the DHA NANG special forces camp. Note details of frame construction and siding.

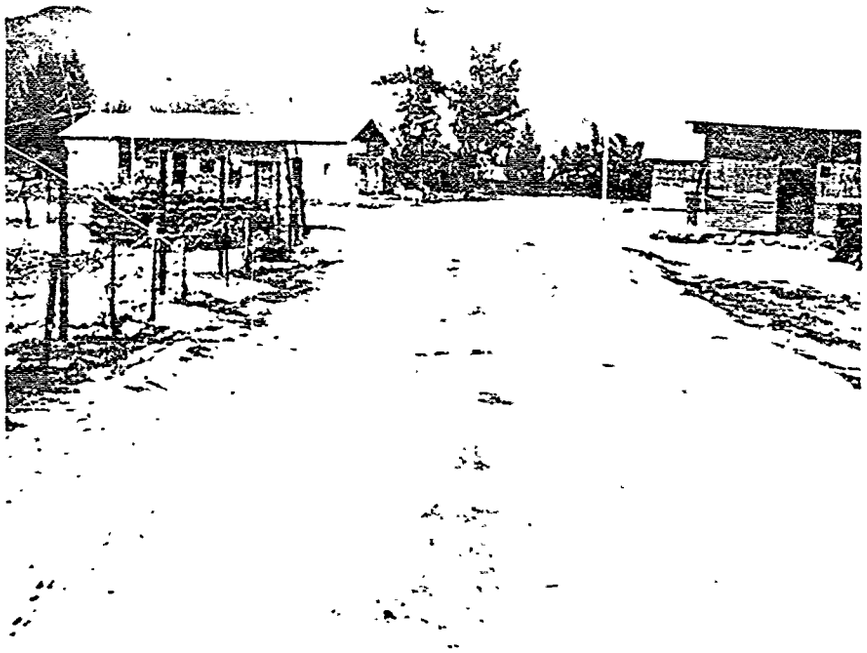
SF-A-3. Contractor personnel prefabricating roof truss members for partially completed mess hall and dayroom building in the background. Old-fashioned augers, in the hands of workman, were used to drill through more than 4 inches of grade A hardwood.



SF-A-3. Interior of partially completed special forces detachment headquarters. All roof truss members are joined by bolted steel plates.

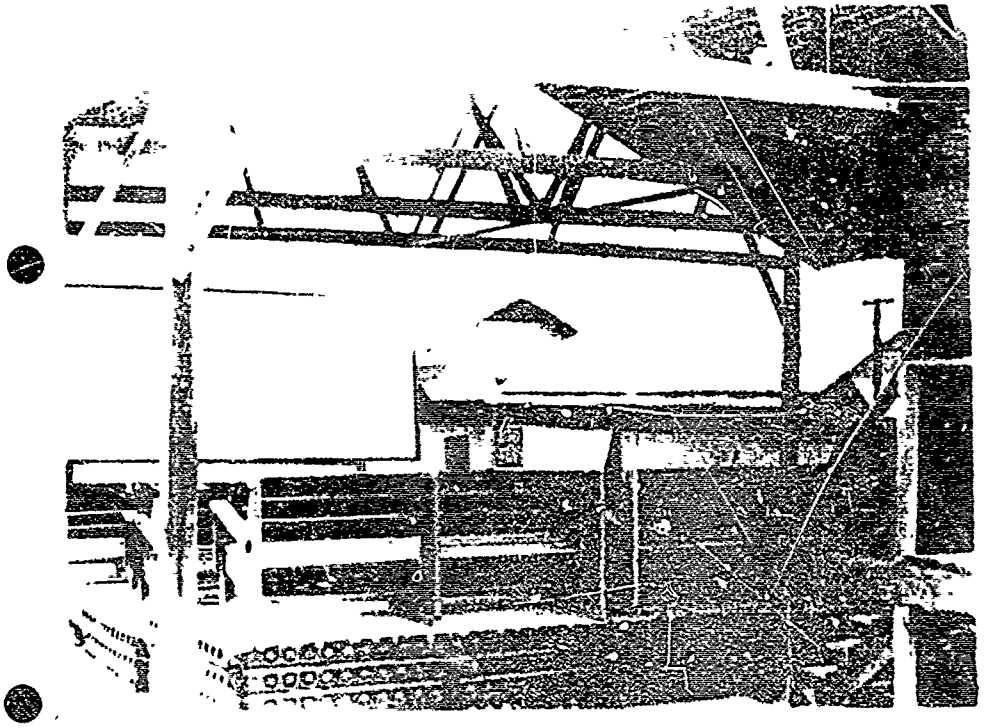


SF-A-3. Contract personnel mixing and placing concrete for floor of maintenance shop. Note measuring box being filled with aggregate to left of concrete mixer. By properly proportioning and controlling the mix of cement, aggregate, and water, high quality concrete is assured. Noteworthy, also, is this example of a monolithic pour, a deviation from the common construction practice in Vietnam of pouring in multiple lifts. Captain Kimbro, the control team utilities officer, shown at the extreme right, insisted on and received from the contractor conformance with design and contract specifications throughout this project. The maintenance shop floor is 6 inches thick. The 3/8ths-inch steel reinforcing rod shown is spot welded on 8-inch centers.



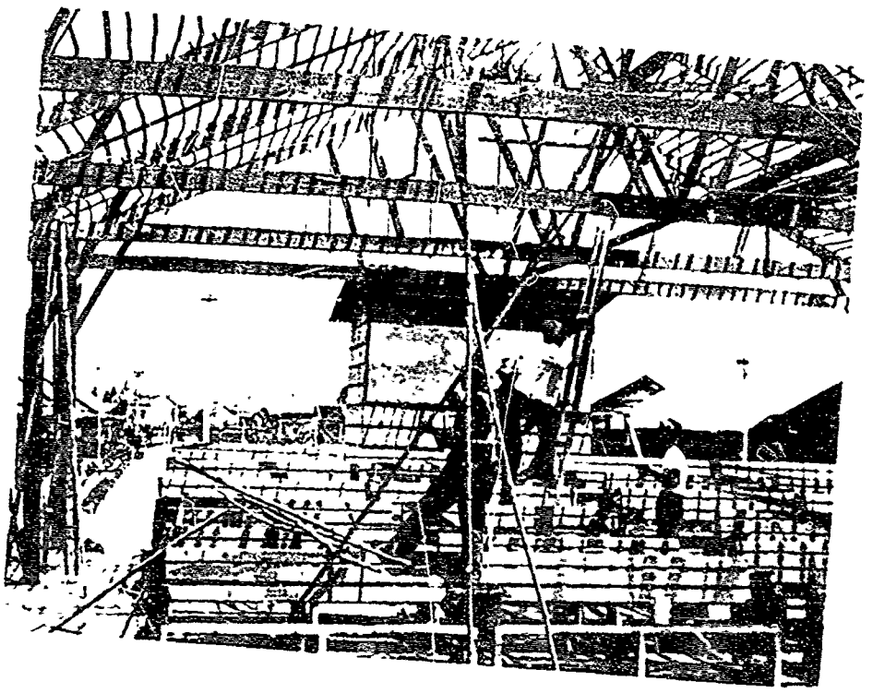
SF-A-4. Portion of road running from LST landing ramps south of NHA TRANG to new special forces logistics support warehouse area. Heavy trucks transferring LST cargo to the warehouse area created chuck holes at frequent intervals along the route. The chief of the ECAD control team determined that the road could be patched in lieu of undertaking a more expensive complete resurfacing project. A $2000 contract was let by US Army Special Forces, Vietnam for resurfacing.

Cost data: Funded by US Army Special Forces, Vietnam.

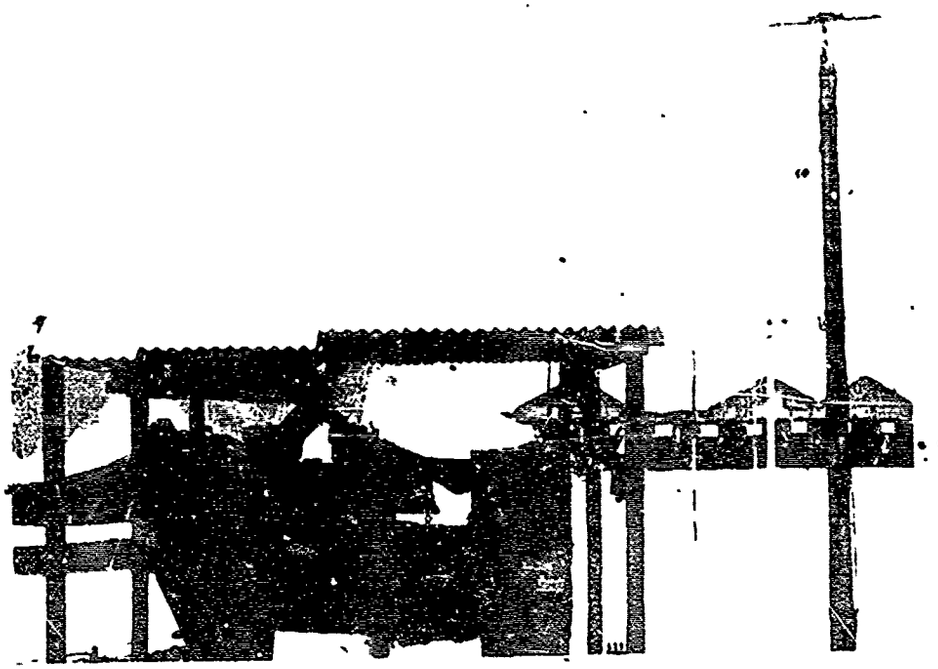


SF-A-5. Outdoor theater for use of special forces troops at NHA TRANG. "Stilwell Starlite Theater" seats 96 and was designed by the ECAD control team. It consists of a projection booth, two speaker boxes, and 24 benches. This project was built from special forces funds at a cost of approximately $300 for materials and labor.

Cost data: No ECAD funds expended.

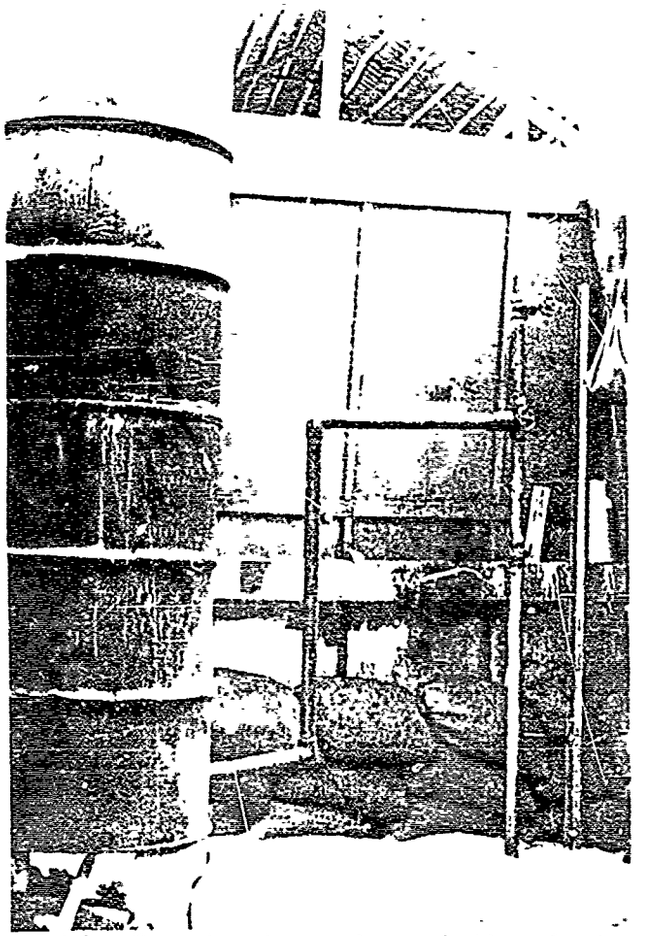


SF-A-5. "Stilwell Starlight Theater" at NHA TRANG under construction. Roof trusses made of milled lumber and purlins of native timber, ready to receive a palm thatched roof, are in evidence. The projection booth is in the rear.



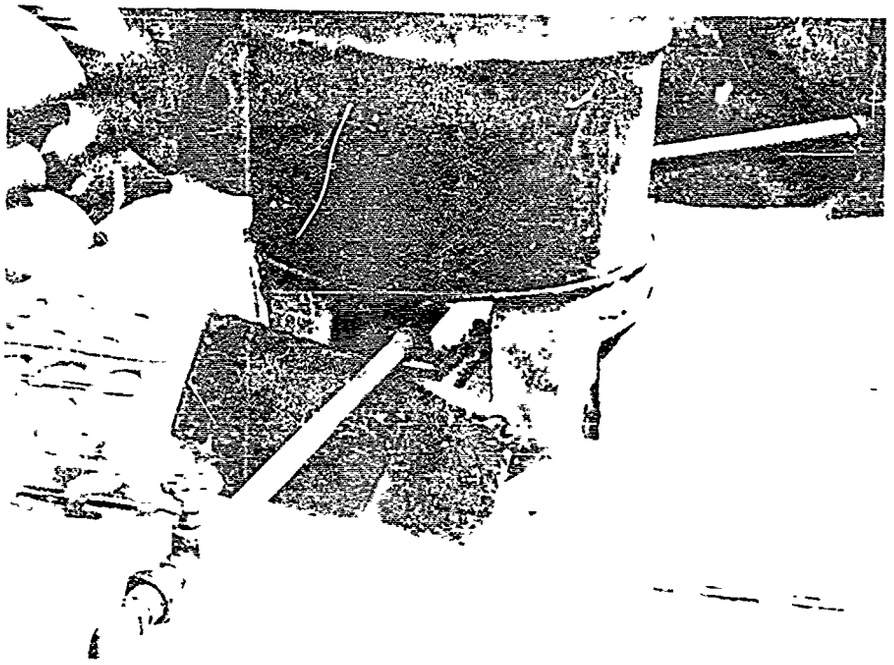
SF-A-6. Designing new electrical distribution system for Long Van Camp, NHA TRANG. Generators and new power poles are shown above. Old distribution system was overloaded and unbalanced. New system designed by the local control team provides a direct power source for electrical equipment in the mess hall kitchen. Work was performed by a local contractor fro $5000.

Cost data: Funded by US Army Special Forces, Vietnam.

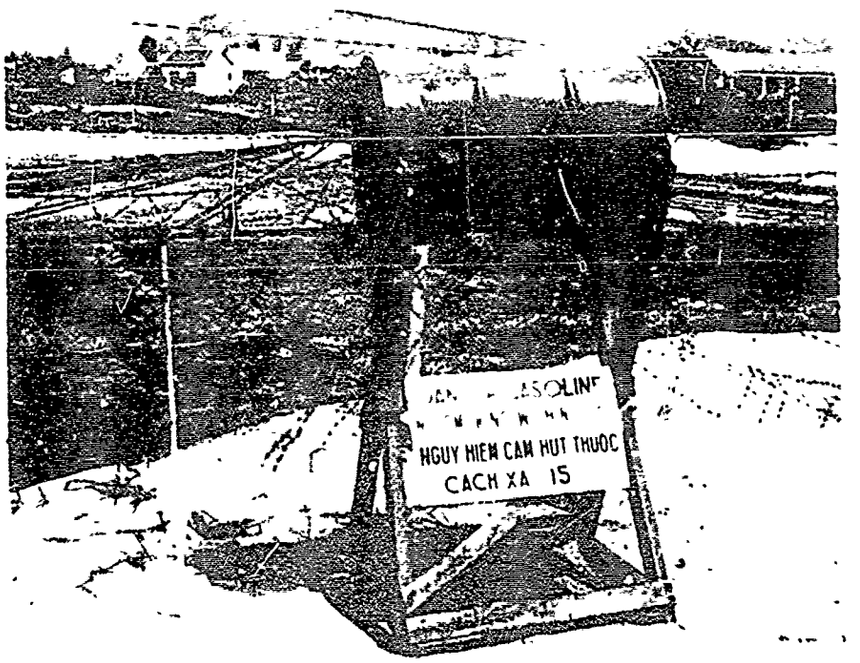


SF-A-7. Vapor type burner for production of water for special forces' camp showers at NHA TRANG. The control team designed the burner in accordance with guidance contained in paragraph 64, FM 21-10. Construction materials purchased were 3/4-inch pipe, valves, and prefabricated stand. The remaining materials were available on site. Piping shown to the right makes up the cold water feed and return lines. The burner and a portion of the plumbing system were installed by control team personnel.

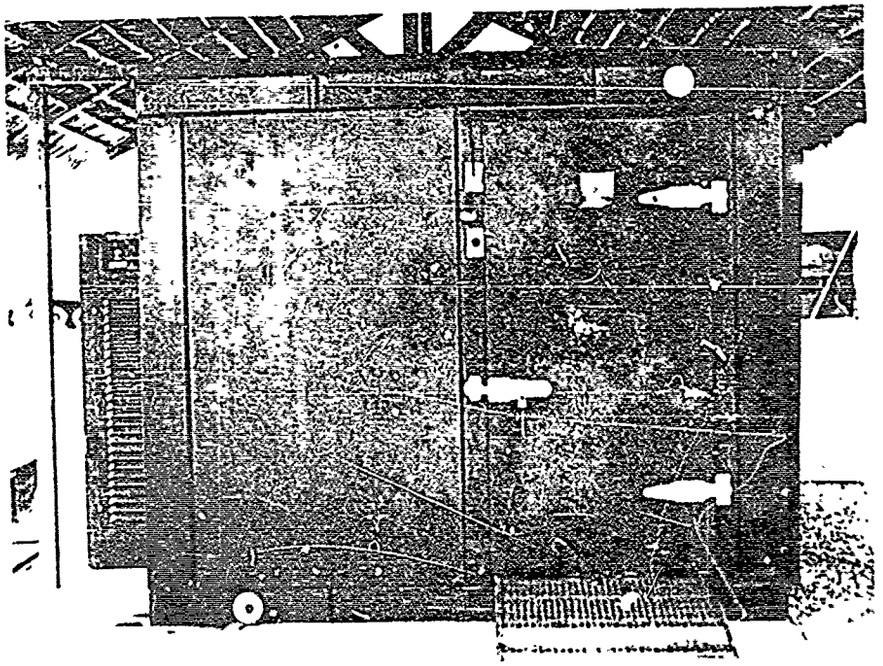
Cost data:		
	Materials	$41.00
	Labor	None
	Total	$41.00



SF-A-7. Details of firebox for vapor burner. Fuel passes through valve at left front and is pressurized by preheating as it passes over the flame in the firebox. Pressurized fuel reverses direction through a "U" section of pipe set on edge, terminating at a lower level. Fuel is ejected into the flame through perforations in the lower leg of the "U".



SF-A-7. Fifty-five gallon drum used as storage tank for gasoline consumed by vapor burner to heat shower water. This tank is located approximately 100 feet from the burner.



SF-A-8. Assembly of 600 cubic foot refrigerator. Work was completed by local hired indigenous laborers, under supervision of the 539th ECAD team. This refrigerator is used for storage of perishable foodstuffs consumed by special forces troops at NHA TRANG. Power unit and compressor for refrigerator are shown at left.

SF-A-9. Development of policy guidance on the use of minefields in Vietnam. The chief of the control team attached to Headquarters, United States Army Special Forces, Vietnam, was directed to prepare a staff study on minefield policy. This project has been completed. The study emphasizes and delineates how mines can be used in the vicinity of special forces A detachment camps for defensive purposes. Also emphasized are the importance of marking and recording these minefields and their removal, when no longer required. Recommended minefield patterns are incorporated in the study.

SF-A-10. Exploration for water sources at HON THIE in the vicinity of NHA TRANG. The operations sergeant of the special forces control team, Master Sergeant Twiss, made several trips to the village of HON THIE in search of a source of water closer than that now available. A mantle of rock was pointed out as a logical covering for a pocket of water. Sergeant Twiss tried explosives four times, each with a 5-pound charge of composition C-4. He was able to fracture the rock mantle, but found no water below.

Cost data: Explosives provided from special forces resources.